CONFIDENTIAL

REPORT NO. 142521

PAGE NO. 1

TEST DATE: 07-APR-1996

S T A

Schlumberger Testing Data Report

Pressure Data Report

Schlumberger

COMPANY: PETRAL EXPLORATION

WELL: KNOCKDHT UNIT #1

TEST IDENTIFICATION

Test Type	MFE-OH-HPR
Test No.	2
Formation	DESERT CREEK
Test Interval (ft)	5974 to 6018
Depth Reference	KB

WELL LOCATION

Field	
County	SAN JUAN
State	UTAH
Sec/Twn/Rng	33-37S-25E
Elevation (ft)	5587

HOLE CONDITIONS

Total Depth (MD/TVD) (ft)	
Hole Size (in)	8.75
Casing/Liner I.D. (in)	
Perf'd Interval/Net Pay (ft)	/ 10
Shot Density/Diameter (in)	

MUD PROPERTIES

Mud Type	LSND
Mud Weight (lb/gal)	10.9
Mud Resistivity (ohm.m)	0.600 @ 68F
Filtrate Resistivity (ohm.m)	0.578 @ 68F
Filtrate Chlorides (ppm)	11000

INITIAL TEST CONDITIONS

Initial Hydrostatic (psi)	3354.17
Gas Cushion Type	
Surface Pressure (psi)	
Liquid Cushion Type	
Cushion Length (ft)	

TEST STRING CONFIGURATION

Pipe Length (ft)/I.D. (in)	5307 / 3.826
Collar Length (ft)/I.D. (in)	0 / 3.826
Packer Depths (ft)	,5974,
Bottomhole Choke Size (in)	.92
Gauge Depth (ft)/Type	5943/HPR-1390

NET PIPE RECOVERY

Volume	Fluid Type	Properties
5 ft	TOP	Rw0.588@68F 10800ppm
125 ft	BOTTOM	Rw5.141@68F 1100ppm

NET SAMPLE CHAMBER RECOVERY

Volume	Fluid Type	Properties
.07 cuft	Gas	.
1480 cc	Water	Rw0.075@68F 108000p
120 cc	Mud	
Pressure:85	GOR:0	GLR:7

INTERPRETATION RESULTS

Model of Behavior	
Fluid Type Used for Analysis	
Reservoir Pressure (psi)	
Transmissibility (md.ft/cp)	
Effective Permeability (md)	
Skin Factor/Damage Ratio	
Storativity Ratio, Omega	
Interporos.Flow Coef.,Lambda	
Distance to an Anomaly (ft)	
Radius of Investigation (ft)	
Potentiometric Surface (ft)	

ROCK/FLUID/WELLBORE PROPERTIES

Oil Density (deg. API)	
Basic Solids (%)	
Gas Gravity	
GOR (scf/STB)	
Water Cut (%)	
Viscosity (cp)	
Total Compressibility (1/psi)	
Porosity (%)	6.8
Reservoir Temperature (F)	
Form.Vol.Factor (bbl/STB)	

PRODUCTION RATE DURING TEST: Data Report

COMMENTS:

This drill stem test was mechanically successful.

Thank you for using Schlumberger. For questions about this report please call the Testing district.

WELL TEST INTERPRETATION REPORT #:142521		PAGE: 2,
CLIENT : PETRAL EXPLORATION		8-APR-96
REGION :WESTERN DISTRICT:VERNAL BASE :DENVER ENGINEER:C. RICHARDS	SEQUENCE OF EVENTS	FIELD: ZONE :DESERT CREEK WELL :KNOCKDHU UNIT LOCATION:33-37S-25E

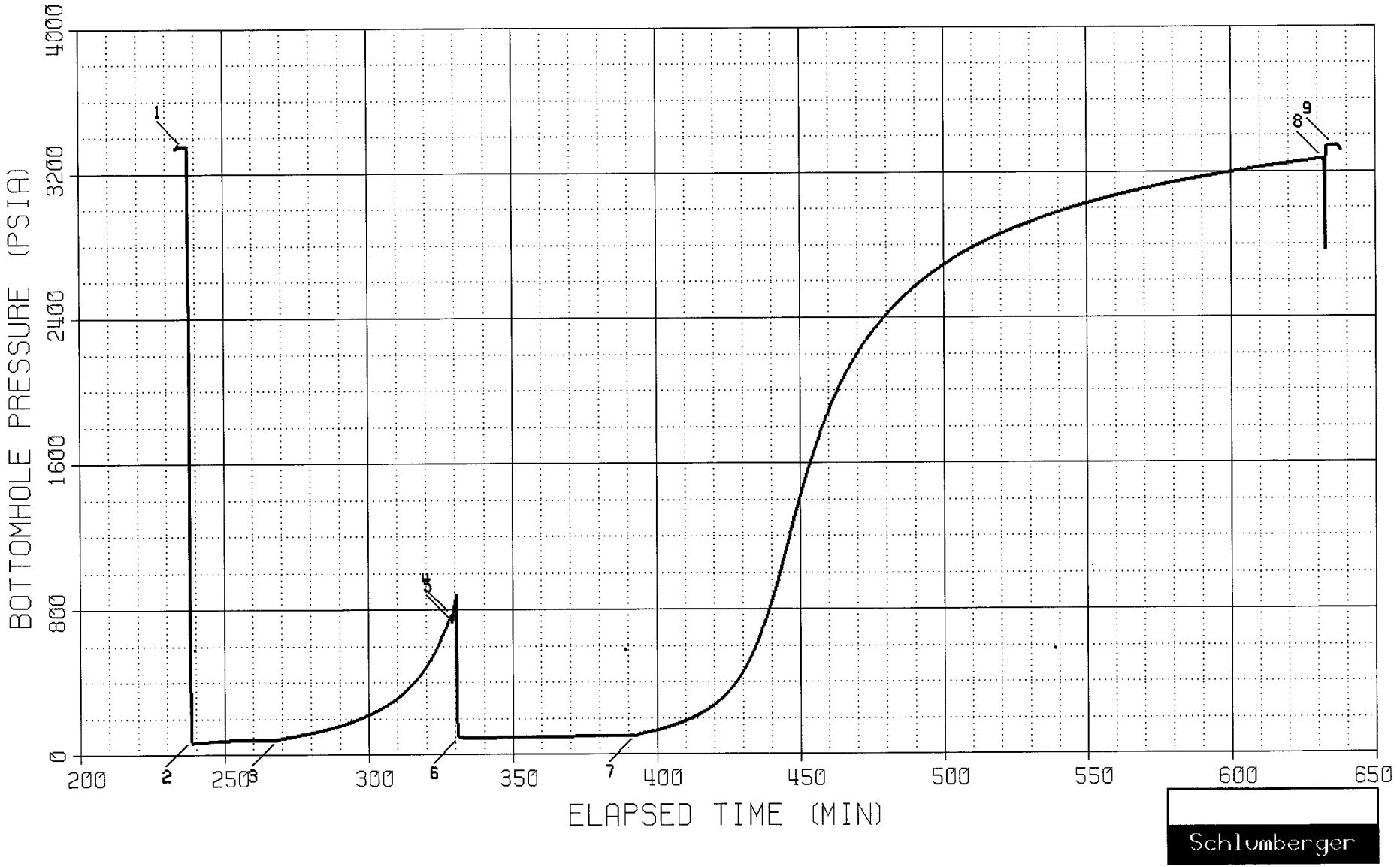
DATE	TIME (HR:MIN)	DESCRIPTION	ET (MINS)	BHP (PSIA)	WHP (PSIG)
		1/4 SURFICE CHOKE			
07-APR	05:12	HYDROSTATIC MUD SET PACKER	-2	3354	
	05:14	START FLOW 1.5" IN WATER	0	85	
	05:24	2" BLOW IN WATER	10		
	05:34	1/4 " BLOW IN WATER	20		
	05:44	1/4" BLOW IN WATER	30		
	05:44	END FLOW & START SHUT-IN	30	83	
	06:44	END SHUT-IN	90	769	
	06:44	CYCLED TOOL	90		
	06:47	START FLOW 1/2" BLOW IN WATER	93	97	
	06:57	1" BLOW IN WATER	103		
	07:07	1" BLOW IN WATER	113		
	07:17	1/8" BLOW IN WATER	123		
	07:27	NO BLOW	133		
	07:37	NO BLOW	143		
	07:47	NO BLOW	153		
	07:48	END FLOW & START SHUT-IN	154	102	
	11:48	END SHUT-IN	394	3272	

BOTTOMHOLE PRESSURE LOG

FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390
DEPTH : 5943 FT
CAPACITY : 20000 PSI
PORT OPENING : INSIDE

COMPANY : PETRAL EXPLORATION
WELL : KNOCKDHU UNIT #1

Electronic Pressure Data

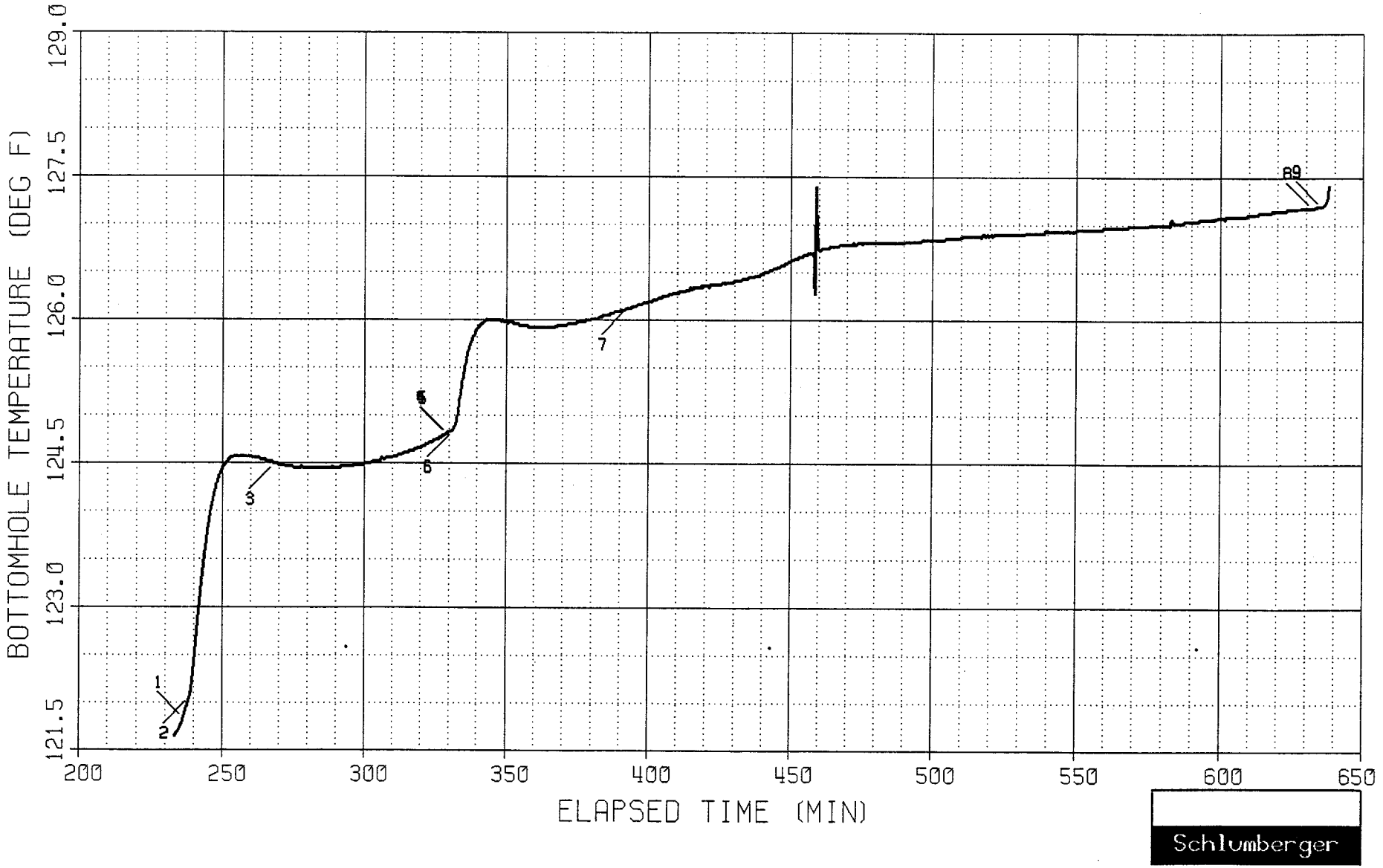


BOTTOMHOLE TEMPERATURE LOG

FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390
DEPTH : 5943 FT

COMPANY : PETRAL EXPLORATION
WELL : KNOCKDHU UNIT #1

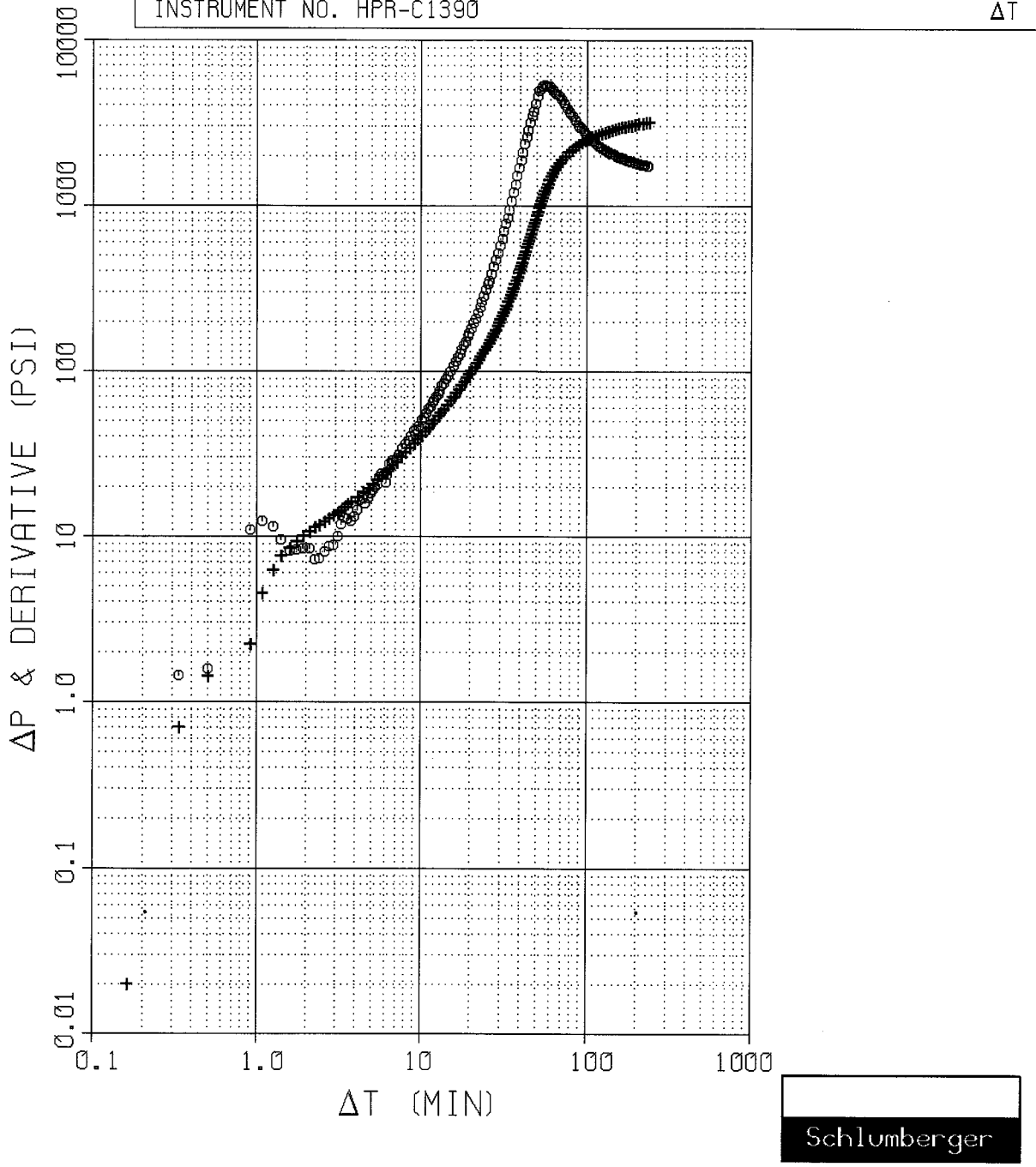
Electronic Temperature Data



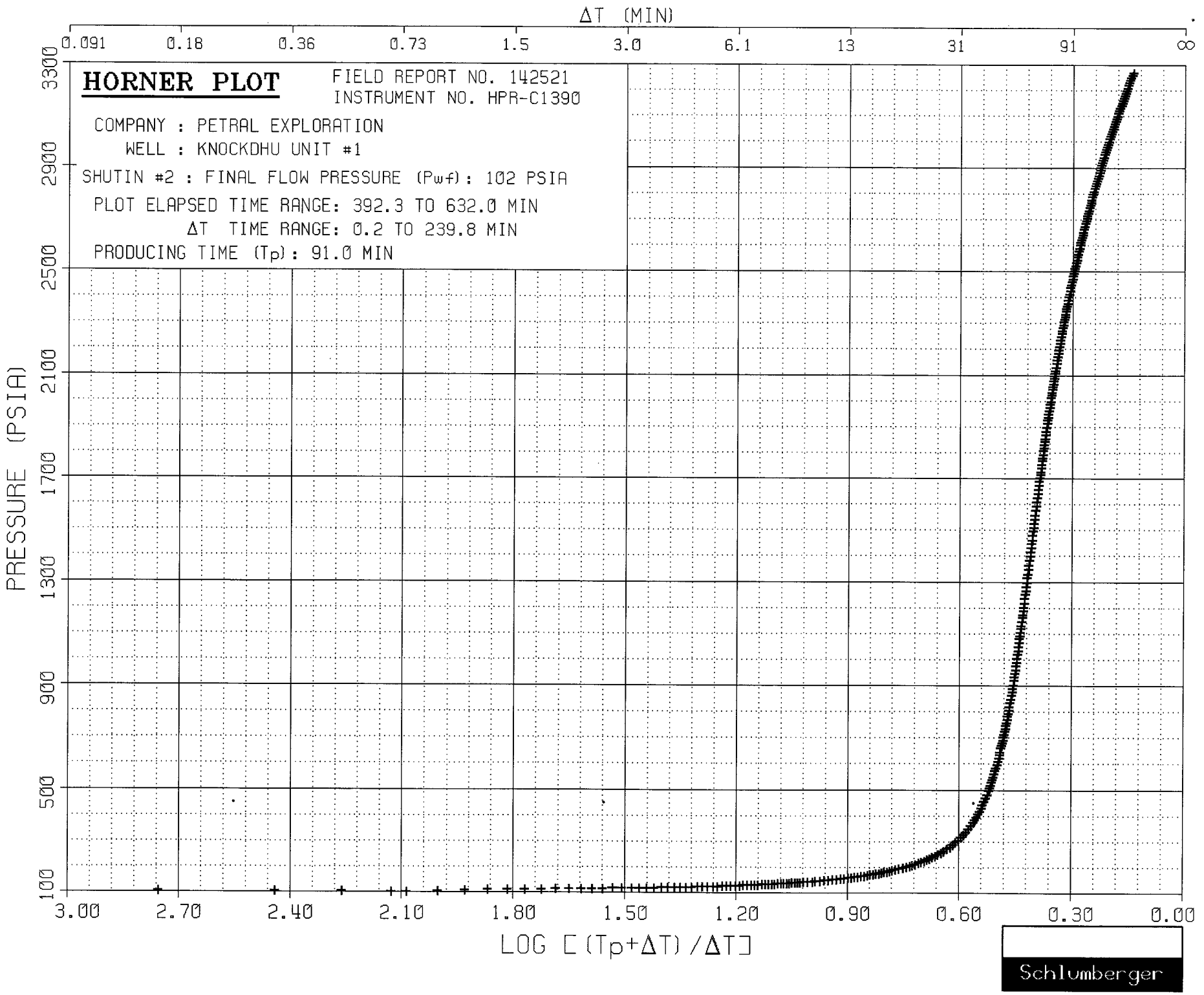
LOG LOG PLOT

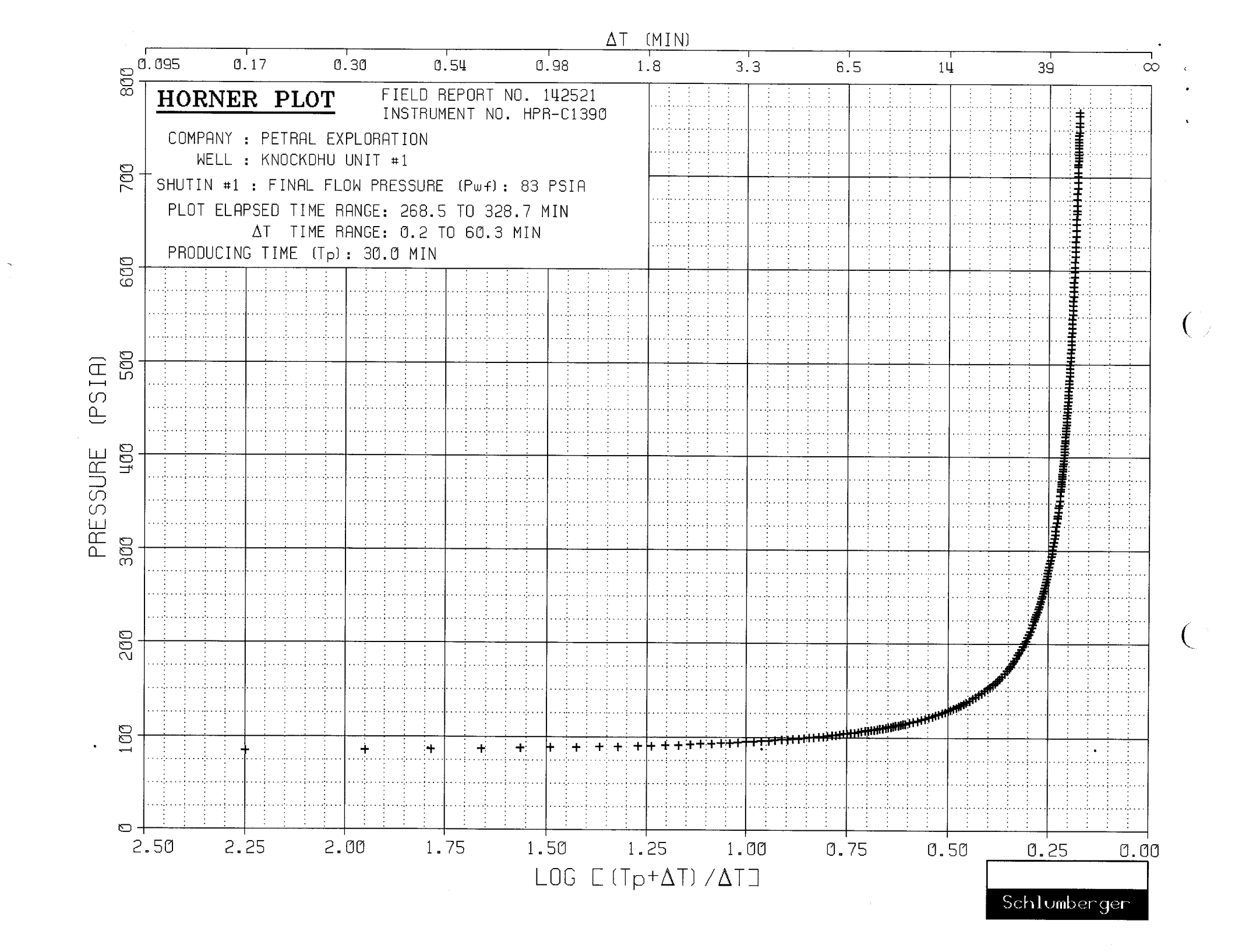
COMPANY : PETRAL EXPLORATION
WELL : KNOCKDHU UNIT #1
FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390

SHUTIN #2 : PRODUCING TIME (Tp): 91.0 MIN
FINAL FLOW PRESSURE (Pwf): 102 PSIA
PLOT ELAPSED TIME RANGE: 392.3 TO 632.0 MIN
ΔT TIME RANGE: 0.2 TO 239.8 MIN



Schlumberger


ΔT (MIN)
0.091
0.18
0.36
0.73
1.5
3.0
6.1
13
31
91
∞
HORNER PLOT
FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390
COMPANY : PETRAL EXPLORATION
WELL : KNOCKDHU UNIT #1
SHUTIN #2 : FINAL FLOW PRESSURE (Pwf): 102 PSIA
PLOT ELAPSED TIME RANGE: 392.3 TO 632.0 MIN
ΔT TIME RANGE: 0.2 TO 239.8 MIN
PRODUCING TIME (Tp): 91.0 MIN
PRESSURE (PSIA)
3300
2900
2500
2100
1700
1300
900
500
100
3.00
2.70
2.40
2.10
1.80
1.50
1.20
0.90
0.60
0.30
0.00
LOG [(Tp+ΔT)/ΔT]
Schlumberger


ΔT (MIN)
0.095
0.17
0.30
0.54
0.98
1.8
3.3
6.5
14
39
∞
HORNER PLOT
FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390
COMPANY : PETRAL EXPLORATION
WELL : KNOCKDHU UNIT #1
SHUTIN #1 : FINAL FLOW PRESSURE (Pwf) : 83 PSIA
PLOT ELAPSED TIME RANGE: 268.5 TO 328.7 MIN
ΔT TIME RANGE: 0.2 TO 60.3 MIN
PRODUCING TIME (Tp) : 30.0 MIN
PRESSURE (PSIA)
800
700
600
500
400
300
200
100
0
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
LOG [(Tp+ΔT)/ΔT]
Schlumberger

****
** WELL TEST DATA PRINTOUT **
****

COMPANY: PETRAL EXPLORATION
WELL: KNOCKDHU UNIT #1

FIELD REPORT NO. 142521
INSTRUMENT NO. HPR-C1390

RECORDER CAPACITY: 20000 PSI PORT OPENING: INSIDE DEPTH: 5943 FT

LABEL POINT INFORMATION
****

#	TIME OF DAY HH:MM:SS	DATE DD-MMM	EXPLANATION	ELAPSED TIME,MIN	BOT HOLE PRESSURE PSIA	BOT HOLE TEMP. DEG F
1	5:12:40	7-APR	HYDROSTATIC MUD	236.33	3354.17	121.84
2	5:14:40	7-APR	START FLOW	238.33	84.88	122.05
3	5:44:40	7-APR	END FLOW & START SHUT-IN	268.33	83.05	124.50
4	6:45:00	7-APR	END SHUT-IN	328.67	769.21	124.81
5	6:45:29	7-APR	CYCLED TOOL	329.15	733.54	124.81
6	6:47:30	7-APR	START FLOW	331.17	96.95	124.84
7	7:48:30	7-APR	END FLOW & START SHUT-IN	392.17	101.91	126.12
8	11:48:19	7-APR	END SHUT-IN	631.98	3271.64	127.18
9	11:51:30	7-APR	HYDROSTATIC MUD	635.17	3345.21	127.20

SUMMARY OF FLOW PERIODS
****

PERIOD	START ELAPSED TIME,MIN	END ELAPSED TIME,MIN	DURATION MIN	START PRESSURE PSIA	END PRESSURE PSIA	INITIAL PRESSURE PSIA
1	238.33	268.33	30.00	84.88	83.05	84.88
2	331.17	392.17	61.00	96.95	101.91	96.95

SUMMARY OF SHUTIN PERIODS
****

PERIOD	START ELAPSED TIME,MIN	END ELAPSED TIME,MIN	DURATION MIN	START PRESSURE PSIA	END PRESSURE PSIA	FINAL FLOW PRESSURE PSIA	PRODUCING TIME, MIN
1	268.33	328.67	60.34	83.05	769.21	83.05	30.00
2	392.17	631.98	239.81	101.91	3271.64	101.91	91.00

TEST PHASE: FLOW PERIOD # 1

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA
5:14:40	7-APR	238.33	0.00	122.05	84.88
5:29:45	7-APR	253.42	15.09	124.56	78.25
5:44:40	7-APR	268.33	30.00	124.50	83.05

TEST PHASE: SHUTIN PERIOD # 1

FINAL FLOW PRESSURE = 83.05 PSIA
PRODUCING TIME = 30.00 MIN

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
5:44:40	7-APR	268.33	0.00	124.50	83.05	0.00	
5:45:40	7-APR	269.33	1.00	124.50	87.98	4.93	1.4914
5:46:40	7-APR	270.33	2.00	124.48	90.67	7.62	1.2041
5:47:40	7-APR	271.33	3.00	124.48	93.48	10.43	1.0414
5:48:40	7-APR	272.33	4.00	124.47	96.40	13.35	0.9294
5:49:40	7-APR	273.33	5.00	124.47	99.36	16.31	0.8451
5:50:40	7-APR	274.33	6.00	124.47	102.30	19.25	0.7782
5:51:40	7-APR	275.33	7.00	124.45	105.36	22.31	0.7231
5:52:40	7-APR	276.33	8.00	124.45	108.54	25.49	0.6767
5:53:40	7-APR	277.33	9.00	124.45	111.64	28.59	0.6368
5:54:40	7-APR	278.33	10.00	124.45	114.89	31.84	0.6021
5:56:40	7-APR	280.33	12.00	124.45	121.67	38.62	0.5441
5:58:40	7-APR	282.33	14.00	124.45	128.84	45.79	0.4973
6:00:40	7-APR	284.33	16.00	124.45	136.35	53.30	0.4586
6:02:40	7-APR	286.33	18.00	124.45	144.30	61.25	0.4260
6:04:40	7-APR	288.33	20.00	124.45	152.70	69.65	0.3979
6:06:40	7-APR	290.33	22.00	124.45	161.69	78.64	0.3736
6:08:40	7-APR	292.33	24.00	124.47	171.78	88.73	0.3522
6:10:40	7-APR	294.33	26.00	124.47	182.67	99.62	0.3332
6:12:40	7-APR	296.33	28.00	124.48	194.46	111.41	0.3163
6:14:40	7-APR	298.33	30.00	124.48	207.16	124.11	0.3010
6:19:40	7-APR	303.33	35.00	124.52	245.02	161.97	0.2688
6:24:40	7-APR	308.33	40.00	124.56	292.82	209.77	0.2430
6:29:40	7-APR	313.33	45.00	124.59	357.84	274.79	0.2218
6:34:40	7-APR	318.33	50.00	124.65	448.58	365.53	0.2041
6:39:40	7-APR	323.33	55.00	124.72	577.12	494.07	0.1891
6:44:40	7-APR	328.33	60.00	124.79	758.35	675.30	0.1761
6:45:00	7-APR	328.67	60.34	124.81	769.21	686.16	0.1753

TEST PHASE: FLOW PERIOD # 2

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA
6:47:30	7-APR	331.17	0.00	124.84	96.95
7:02:30	7-APR	346.17	15.00	126.00	93.88
7:17:30	7-APR	361.17	30.00	125.92	97.17
7:32:30	7-APR	376.17	45.00	125.98	99.66
7:47:30	7-APR	391.17	60.00	126.10	102.05

TEST PHASE: FLOW PERIOD # 2

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA
7:48:30	7-APR	392.17	61.00	126.12	101.91

TEST PHASE: SHUTIN PERIOD # 2

FINAL FLOW PRESSURE = 101.91 PSIA
PRODUCING TIME = 91.00 MIN

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
7:48:30	7-APR	392.17	0.00	126.12	101.91	0.00	
7:49:35	7-APR	393.25	1.08	126.12	106.43	4.52	1.9307
7:50:35	7-APR	394.25	2.08	126.14	112.56	10.65	1.6508
7:51:36	7-APR	395.27	3.10	126.14	115.65	13.74	1.4822
7:52:45	7-APR	396.42	4.25	126.16	119.56	17.65	1.3505
7:53:45	7-APR	397.42	5.25	126.16	123.09	21.18	1.2632
7:54:45	7-APR	398.42	6.25	126.18	126.68	24.77	1.1920
7:55:45	7-APR	399.42	7.25	126.18	130.59	28.68	1.1320
7:56:45	7-APR	400.42	8.25	126.19	134.51	32.60	1.0803
7:57:45	7-APR	401.42	9.25	126.21	138.79	36.88	1.0349
7:58:55	7-APR	402.58	10.41	126.21	143.88	41.97	0.9886
8:00:55	7-APR	404.58	12.41	126.23	153.37	51.46	0.9208
8:02:55	7-APR	406.58	14.41	126.25	163.87	61.96	0.8642
8:04:55	7-APR	408.58	16.41	126.28	175.21	73.30	0.8159
8:06:55	7-APR	410.58	18.41	126.28	187.89	85.98	0.7740
8:08:55	7-APR	412.58	20.41	126.30	201.93	100.02	0.7371
8:10:55	7-APR	414.58	22.41	126.34	217.60	115.69	0.7042
8:12:55	7-APR	416.58	24.41	126.34	235.47	133.56	0.6747
8:14:55	7-APR	418.58	26.41	126.36	255.84	153.93	0.6479
8:16:55	7-APR	420.58	28.41	126.36	279.18	177.27	0.6236
8:18:55	7-APR	422.58	30.41	126.37	306.23	204.32	0.6012
8:23:55	7-APR	427.58	35.41	126.39	396.36	294.45	0.5527
8:28:55	7-APR	432.58	40.41	126.43	531.31	429.40	0.5121
8:33:55	7-APR	437.58	45.41	126.46	725.76	623.85	0.4777
8:39:00	7-APR	442.67	50.50	126.52	982.15	880.24	0.4475
8:44:04	7-APR	447.73	55.56	126.59	1288.90	1186.99	0.4213
8:49:05	7-APR	452.75	60.58	126.66	1564.74	1462.83	0.3983
8:54:10	7-APR	457.83	65.66	126.70	1798.76	1696.85	0.3777
8:59:15	7-APR	462.92	70.75	126.75	1991.14	1889.23	0.3591
9:04:19	7-APR	467.98	75.81	126.79	2147.08	2045.17	0.3425
9:09:20	7-APR	473.00	80.83	126.79	2273.09	2171.18	0.3275
9:14:20	7-APR	478.00	85.83	126.81	2377.74	2275.83	0.3139
9:19:20	7-APR	483.00	90.83	126.81	2466.45	2364.54	0.3014
9:24:20	7-APR	488.00	95.83	126.81	2542.75	2440.84	0.2899
9:29:20	7-APR	493.00	100.83	126.82	2609.24	2507.33	0.2793
9:34:20	7-APR	498.00	105.83	126.84	2667.71	2565.80	0.2695
9:39:29	7-APR	503.15	110.98	126.84	2721.18	2619.27	0.2601
9:44:30	7-APR	508.17	116.00	126.86	2767.42	2665.51	0.2515
9:49:40	7-APR	513.33	121.16	126.88	2809.98	2708.07	0.2433
9:54:40	7-APR	518.33	126.16	126.90	2847.88	2745.97	0.2359
9:59:40	7-APR	523.33	131.16	126.90	2882.54	2780.63	0.2289
10:04:40	7-APR	528.33	136.16	126.90	2914.33	2812.42	0.2223

TEST PHASE: SHUTIN PERIOD # 2 FINAL FLOW PRESSURE = 101.91 PSIA
PRODUCING TIME = 91.00 MIN

TIME OF DAY HH:MM:SS	DATE DD-MMM	ELAPSED TIME,MIN	DELTA TIME,MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
10:09:40	7-APR	533.33	141.16	126.91	2943.58	2841.67	0.2161
10:14:40	7-APR	538.33	146.16	126.91	2970.98	2869.07	0.2102
10:19:40	7-APR	543.33	151.16	126.93	2996.48	2894.57	0.2047
10:24:40	7-APR	548.33	156.16	126.93	3020.21	2918.30	0.1994
10:29:40	7-APR	553.33	161.16	126.95	3042.56	2940.65	0.1944
10:34:40	7-APR	558.33	166.16	126.95	3063.45	2961.54	0.1897
10:39:40	7-APR	563.33	171.16	126.97	3083.26	2981.35	0.1852
10:44:40	7-APR	568.33	176.16	126.99	3101.85	2999.94	0.1809
10:49:50	7-APR	573.50	181.33	126.99	3120.06	3018.15	0.1766
11:04:50	7-APR	588.50	196.33	127.04	3167.39	3065.48	0.1654
11:20:00	7-APR	603.67	211.50	127.09	3208.53	3106.62	0.1554
11:35:00	7-APR	618.67	226.50	127.15	3243.95	3142.04	0.1467
11:48:19	7-APR	631.98	239.81	127.18	3271.64	3169.73	0.1397

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JUN 0 8 1996
DIVISION OF OIL, GAS & MINING

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT - " for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: U-43651

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.: #1 Knockando-Federal

2. Name of Operator: Petral Exploration LLC

9. API Well No.:

3. Address and Telephone No.: P.O. Box 5083, Denver, Colorado 80202

10. Field and Pool, or Exploratory Area: Wildcat

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2180' FNL & 2000' FWL (SE NW) of Section 19, T.37S., R.25E

11. County or Parish, State: San Juan , Utah

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Designation of Operator	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Petral Exploration, LLC, as Operator is responsible for conducting all Operations in accordance with the requirements of the Oil & Gas Lease, APD Sundry Notice Approval, Regulations found in 43 CFR, and applicable Onshore Orders and/or Notice to Lessees.

Bond coverage for Operations conducted on this well is being provided by the Operator stated above in the form of a $25,000 State-wide bond. BLM bond number UT 1040. Deposit Certificate # 101741006.
Operator designation is for leased lands in Section 19, T.37S., R. 25E.(only)

Approval By Lessee: Celsius Energy Company

Its: G. L. Nordloh, President & CEO

14. I hereby certify that the foregoing is true and correct: Petral Exploration LLC, by Petroro Corporation, Its Manager

Signed Dianne Snoyer Title Vice Pres Date 5-2-96

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
324 South State, Suite 301
Salt Lake City, Utah 84111-2303

RECEIVED
NOV 10 1995

IN REPLY REFER TO
3104
(UT-923)

NOV 7 1995

DECISION

Obligor Petral Exploration LLC P.O. Box 5083 Denver, CO 80217-5083	Bond Amount:	$25,000
	Bond Type:	Statewide Oil and Gas
Financial Institution: Norwest Bank Colorado, N.A. 1740 Broadway Denver, CO 80274	BLM Bond Number:	UT 1040

Statewide Oil and Gas Personal Bond and Certificate of Deposit Accepted

On November 6, 1995, this office received Bond Form 3000-4 together with Investment Deposit Agreement (Book Entry) No. 101741006 evidencing the purchase of a $25,000 Certificate of Deposit (CD) in the amount of $25,000 to secure a statewide oil and gas bond for the above obligor. Both documents have been examined and are accepted effective November 6, 1995.

The CD will be retained by the Bureau of Land Management (BLM) and will automatically renew annually until all terms and conditions of the leases have been fulfilled or until a satisfactory replacement bond has been accepted by the BLM.

The bond will be maintained by this office. The bond constitutes coverage of all operations conducted by or on behalf of the obligor on Federal leases in the State of Utah. The bond provides coverage of the obligor where that obligor has interest in, and/or responsibility for operations on, leases issued under the authority of any of the Acts cited on the bond form. Please note that Federal leases do not include Indian leases.

If you have any questions, please contact Irene Anderson of this office at (801) 539-4108.

Robert Lopez
Chief, Branch of Mineral
Leasing Adjudication

cc: All Districts

McILNAY

McILNAY & ASSOCIATES, INC.

2305 OXFORD LANE • CASPER, WY 82604 • (307) 265-4351 • FAX (307) 473-1218

PETROLEUM CONSULTING ENGINEERS & PROPERTY MANAGEMENT

REGISTERED PROFESSIONAL ENGINEERS

June 12, 1996

Mr. Frank Matthews
Utah Board of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Petral Exploration, LLC , #1 Knockando Unit, UTU-043651,
Pending Knockando Unit, SE NW Section 19-T37S-R25E, San Juan Co., UT

Dear Mr. Matthews:

The attached package includes the following for your review and approval.

1. Request for Confidentiality.
2. Copy of Federal APD and NTL-6 package in lieu of Utah APD.

Please let us know if you are in need of any additional information.

Sincerely,

McILNAY & ASSOCIATES, INC.

Kenneth P. Kidneigh
Petroleum Engineer

so

cc: Petral Exploration LLC
Rose Exploration Associates

McILNAY

McILNAY & ASSOCIATES, INC.

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PETROLEUM CONSULTING ENGINEERS & PROPERTY MANAGEMENT

REGISTERED PROFESSIONAL ENGINEERS

June 12, 1996

Mr. Frank Matthews
Utah Board of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Re: Petral Exploration, LLC, #1 Knockando Unit, UTU 043651
SE NW Section 19-T37S-R25E, San Juan Co., UT

Dear Mr. Matthews:

By this letter we are requesting all drilling, completion and production information on the #1 Knockando Unit be held **CONFIDENTIAL** for the period allowed by the State of Utah.

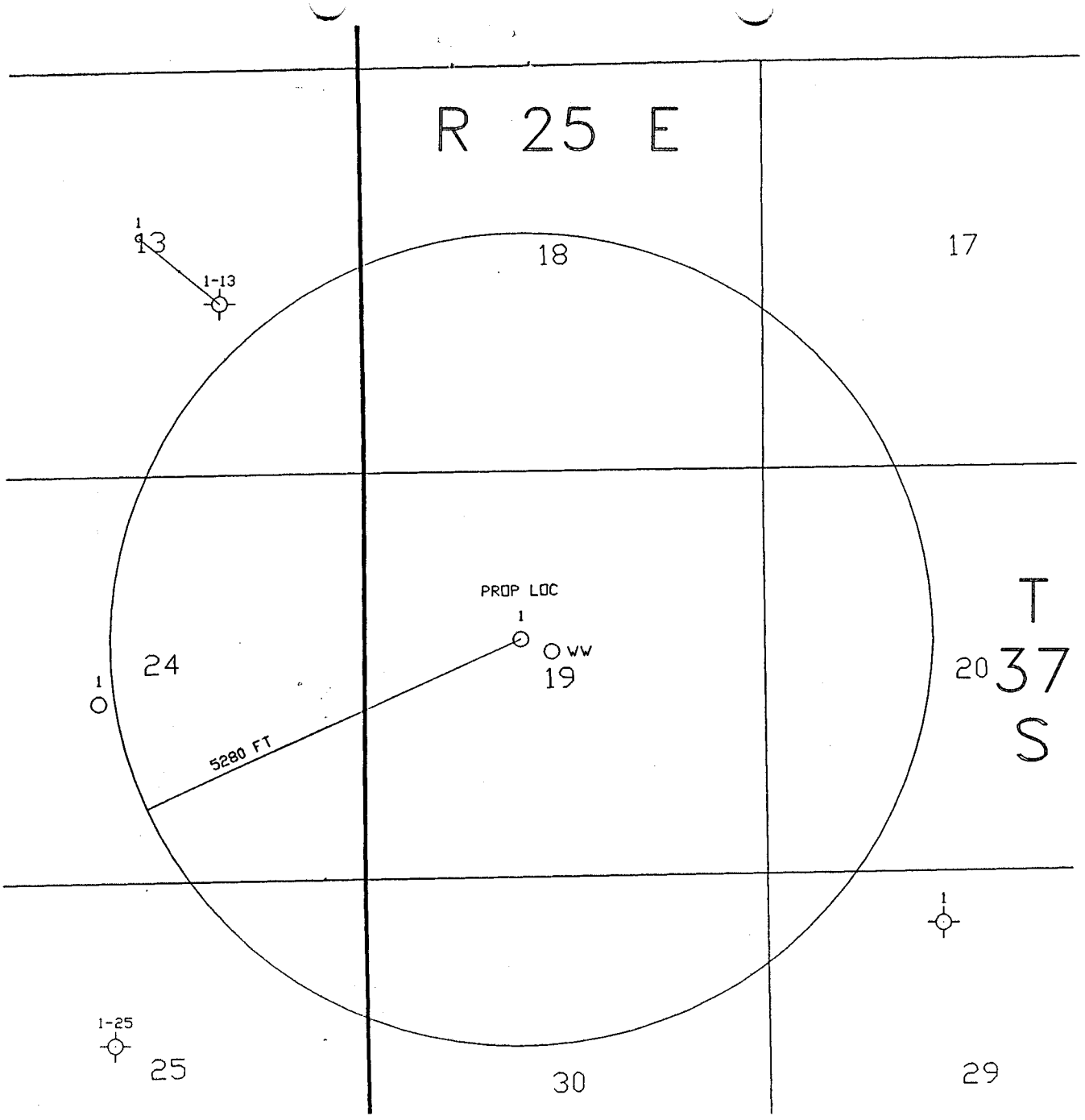
Sincerely,

McILNAY & ASSOCIATES, INC.

Kenneth P. Kidneigh
Petroleum Engineer

so

cc: Petral Exploration LLC
Rose Exploration Associates



rose exploration associates

1200 Denver Club Building - 518 17th St. - Denver, Colorado 80202 - (303) 595-0664

PETRAL EXPLORATION #1 Knockando Unit

RADIUS MAP

Scale 1 inch = 2000 feet

Geologist:	RJC, MEW	Date Created: 05/24/1996 Modified:	
Geophysicist:	JNE	State:	UT
Engineer:	BAM	County:	San Juan
Drawn By:	MEW	Geological Play:	Upper Ismay / Lower Desert Creek
Contour Interval:	n/a	File:	V:\PB\ALTMOR\alt_pros.dwg

WWO
Water Well

DRILLING PROGRAM

Petral Exploration, LLC
#1 Knockando Unit
Knockando Unit - In Process
2170' FNL & 2000' FWL (SE NW) Sec. 19-T37S-R25E
Lease # UTU 043651
San Juan Co., UT

A. Surface Formation:
Morrison

B. Estimated Formation Tops: - (KB Measurements)

Formation	TVD Depth (KB)	
Morrison	Spud	
Entrada	268	
Navajo	463	
Wingate	1015	
Chinle	1235	
Shinarump	1970	
Cutler	2205	
Honaker Trail	4075	
La Sal	4833	
Upper Ismay	5152	
Upper Ismay massive anhydrite	5179	
Upper Ismay mound	5209	
Hovenweep Shale	5279	
Lower Ismay	5312	
Lower Ismay anhydrite	5329	
Lower Ismay carbonate	5355	
Gothic Shale	5363	
Upper Desert Creek	5387	
Upper Desert Creek anhydrite	5400	
Lower Desert Creek	5413	
Lower Desert Creek anhydrite	5423	
Lower Desert Creek mound	5430	
Chimney Rock Shale	5447	
Akah	5468	
TOTAL DEPTH	5493	
Salt	6015	DO NOT PENETRATE

C. Estimated Depths at which Anticipated Water, Oil, Gas or other Mineral-Bearing Formations are Expected to be Encountered:

Hydrocarbon bearing zones may be found from 5209' (Upper Ismay mound) to 5,493'. Commercial water zones are not anticipated. All formations below surface may contain water. Fresh water zones will be protected through casing and cementing programs (see parts E & F).

D. Minimum Pressure Control Equipment & Auxiliary Equipment:(see attached diagram)

1. One 11" - 3000 psig annular preventer. One 11" - 3000 psig double ram blowout preventor with blind rams and one set of 4 1/2" drill pipe rams (above blind ram) will be installed and utilized prior to drilling below 9 5/8" surface csg. Flow sensor and PVT will be installed prior to drilling below surface casing and utilized to T.D.

2. Blowout preventor or drilling spool will be equipped with one 3" and one 2" sideoutlet.

3. A 3000 psig choke manifold with two (2) adjustable chokes will be installed prior to drilling below surface casing. The choke line will be as straight as possible and turns, if required, will have a targeted T block.

4. An accumulator rated at 3000 psig W.P. with a minimum of three (3) hydraulic control stations will be utilized. One for annular, one for blind rams and one for pipe rams. Remote controls will be located at the accumulator house at G.L. and on the floor. Manual controls (e.g. hand wheels) will be located at G.L. under the substructure. A valve shall be installed in the hydraulic closing line to serve as a locking device when the accumulator system is inoperative.

5. Pressure testing procedures and requirements. Prior to drilling out below the 8 5/8" surface casing, surface casing will be tested to 2065 psig (70% of minimum internal yield of the 8 5/8", 24#/ft., K-55 surface casing) for a minimum of 5 min. BOP stack and associated equipment (e.g., choke manifold, lower and upper kelly cocks, valves, etc.) will be tested to 3000 psig for 15 min. utilizing a test plug. The annular preventor will be tested to 1500 psig for 15 min. Certified BOP testing service company will be utilized for pressure testing. All pressure testing operations must be witnessed by Petral's well site representative, McIlnay & Associates, Inc..

6. Drilling contractor will perform a daily operational check of all BOP equipment (e.g. includes associated equipment). Pipe and blind rams shall be activated each trip.

7. All BOP pressure testing and operational check will be recorded in the daily "Tour" book.

8. A BOP and pit level drill will be conducted by the drilling contractor weekly and noted in the "tour" report book.

9. 24 hours prior to pressure testing notify the BLM, and Utah Division of Oil, Gas & Mining.

Every 30 days BOP and accessory equipment will be pressure tested to 3000 psig (utilize test plug). Notify the BLM and Utah Division of Oil, Gas & Mining prior to test.

E. Casing Program:

Conductor Casing: 80' of 16" pipe cemented in place to surface.

Surface Casing:
34 Jts. - 1335', 8 5/8, 24 #/ft, J-55 , ST&C, "A" Grade (new).

Accessory Equipment
1 - 8 5/8" Guide Shoe
1 - 8 5/8" Insert Float installed lst joint above shoe.
1 - 8 5/8" Centralizer placed middle of shoe joint.
1 - 8 5/8" Centralizer on 2nd collar above shoe.
3 - 8 5/8" Centralizer thereafter on every 4th collar for 3 centralizers.
3 - 8 5/8" Centralizer thereafter on every 6th collar for 3centralizers.
1 - 8 5/8" Centralizer placed 3rd collar from surface.
9 Total Centralizers

Production Casing (New):

Interval	Net-Ft.	Gross-Ft	Specifications
0 - 5,493'	5,493'	5,550'	5 1/2", 15.5#/ft., J or K-55, ST&C or LT&C, New

Accessory Equipment
To be determined at time of need.

Testing Procedure:
At time of BOP testing and prior to drilling out, surface casing will be tested to 70% of burst pressure for new casing (2065 psig). Production casing will be pressure tested to a minimum of 3000 psig prior to commencement of completion.

F. Cementing Program: Check water quality for all cementing slurries.

Conductor: Cement to surface.

Surface Casing: (Tentative - volumes and types may be changed. Designed to circulate cement to surface - 100% excess.)

Lead Slurry: 480 sks. Halliburton Light Std. (70) w/2% $CaCl_2$ & ¼#/sk. Flocele
Slurry yield - 1.95 CF/sk

Tail Slurry: 150 sks. Class "G" cement w/2% $CaCl_2$ & ¼#/sk. Flocele
Slurry yield - 1.19 CF/sk
Note: If cement does not circulate to surface, utilize 1" to bring to surface.

Production Casing: (Cement minimum of 1000' fillup above potential pay zone(s))

Preflush: 10 Bbls. fresh water
20 Bbls. mud flush (or equivalent)

Scavenger:
50 sks. Pozmix A (70)

Primary Slurry: 220 sks. Std. Pozmix A (70), w/0.5% Micro Bond M, 2% Halliburton Gel, 0.5% Halad 344 & 1/4#/sk. Flocele.

Note: Slurry volume to be recalculated based on hole caliper and number and depth of zones. 25% excess and 7 7/8" hole used for initial calculations.

G. Drilling Fluids:

Depth	0 - 1335'	1335' - 4000'	4000' - 5370'	5370' - T.D.
Wt. - #/gal	8.4 -8.9	8.4 - 8.9	*1 8.6 - 10+	*5 9 -12+
Vis. - sec.qt.	27 - 40	30 - 35	*2 34 - 40	*2 34 - 40
WL - cc	NC	NC	*3 10 Max	8 - 10
Ph	NC	NC	*4 9.0 - 10	9.5
PV/YP	--	--	6-10/8-16	6-10/8-16
Gels (sec/ min)	--	--	1-4/3-9	1-4/3-9
Type System	FWG	FWG/SDF 2000 Sweeps	LSND	LSND

*1 Drill Upper Ismay mound with as low a mud weight that can be achieved. May require weighting up to kill water flows. If required to weight up for water flow, pretreat mud w/10 sks. of Magmafiber loss circulation material prior to drilling or coring the Upper Ismay Mound.

*2 Recommended Viscosity:
Coring - 42-44 sec./qt.
Logging - 50 sec./qt.
DST's - 42-44 sec./qt.

*3 Prior to penetrating the Upper Ismay mound.

*4 Raise Ph to 10 prior to drilling anhydrites.

*5 Lower Desert Creek may be overpressured and require a weighted mud system.

Prior to penetrating the Upper Ismay Mound @ 5209' or the Lower Desert Creek Mound add 100 ppm nitrates to the mud system.

Sufficient mud materials to maintain mud requirements and meet minor lost circulation and blowout problems will be on the wellsite. The pits will be monitored on trips to assure that the hole is kept full while tripping the drilling string. A pit volume totalizer (PVT), stroke counter & flow sensor will be utilized below the surface casing setting depth to T.D.

H. Coring, Testing, Logging and Tentative Completion Program:

1. Two 60' cores of Upper Ismay mound at estimated depth of 5,209' TVD. On site geologist to pick core point and samples for analyses.

2. Drill stem tests will be at the discretion of the operator and will be based on shows, logs, hole conditions, etc.

3. If a completion attempt is to be made, 5 1/2" casing will be cemented into place. The following presents a summary of tentative completion procedures.
   a. Perforate pay zones with approximately 4 shots/ft.
   b. Perforations may be stimulated w/HClacid.
   c. A Sundry Notice will be filed with the final completion plan.

   Note: All perforations and the size of stimulation jobs are tentative and final design will be based on electric logs, cores, and drill stem test data.

4. Logging:
   GR-DLL-MSFL (min) - Base surface casing to T.D.
   GR-BHCS (long spaced integrated) w/Cal - Base surface casing to T.D.
   GR-FDC-CNL-w/PE (min.) - Base surface casing to T.D.
   SHDT - Minimum run

5. Samples:
   30' samples from 1,335' - 4,000'
   10' samples 4,000' to TD

All cutting samples are to be washed and stored in properly marked cloth bags. Tie the sample bags in 100' depth groups to dry. Store in a clean, dry place. Sample depth intervals may be changed at the discretion of the geologist.

I. Abnormal Conditions or Potential Hazards:

Potential problems include possible water flows to 4833'; abnormal pressure in Lower Desert Creek Carbonate (3500 psig); lost circulation and seepage from surface to TD w/possible differential sticking. Estimated temperature at T.D. 140^0 F. Hydrogen sulfide gas is not anticipated.

J. Auxiliary Equipment Required: See Paragraph D.

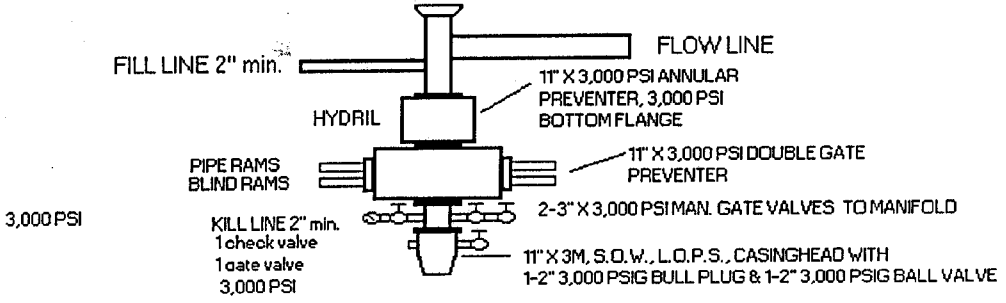
K. Anticipated Starting Date of Drilling Operations:

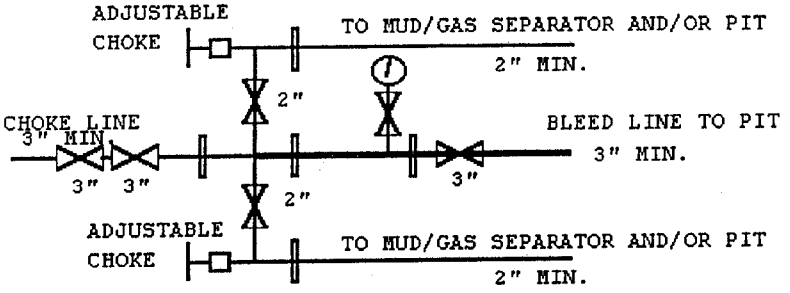
Plan to start drilling ≈ July 15, 1996. 15 days should be required to drill, test, log and set casing.

L. Additional Considerations

None.

BOP EQUIPMENT
3,000 PSIG W.P.





3,000 PSI CHOKE MANIFOLD

SURFACE USE PROGRAM

Petral Exploration, LLC
#1 Knockando Unit
Knockando Unit - In Process
SE NW Sec. 19-T37S-R25E
Lease UTU 043651
San Juan Co., UT

A. Existing Roads

1. To visit the wellsite, proceed south for 1 mile from the Comfort Inn in Blanding, Utah and turn left at Amer-Gas on 700 E Brown Canyon Road. Continue 1 mile to County Road #206 and turn right. Stay on Co. 206 for 8.5 miles (keep to left at fork) and go an additional 14 miles (total of 22.5 miles on Co. 206) to the old compressor station at the Montezuma Canyon Road, (Co. Rd. 146). Turn left and go north 4.4 miles and cross the creek bed. Turn right and go 1.1 miles to the fence and a "Y" in the road. Keep left and go about 2 miles. Stay to the left and follow the flagged route to the location. (The last 1.6 miles are flagged from the 2-track road.)

2. Existing roads are paved, gravel or dirt and are suitable for heavy loads. Existing roads, excluding those maintained by the State or County, will be maintained in the same or better condition. Petral will participate in any cooperative agreement that currently exists, or might be required in the future, to improve and maintain the existing roads. The access road will not cross Indian lands. With the exception of State or County maintained roads, the existing roads are on Bureau of Land Management and land owned by Guy Tracy, Box 763, Monticello, Utah.

3. Proposed wellsite and access roads: See Figures 1 - 3.

B. Access Roads to be Constructed or Reconstructed:
See Figure 2. The last 1.6 miles to the location will be a newly constructed access road bladed and if necessary with low water crossings. These roads will be upgraded and graveled as needed if production is obtained.

C. Existing Wells within a One-Mile Radius(See Figure 2)

1. Water Wells: One
2. Injection Wells: None
3. Abandoned Wells: None
4. Disposal Wells: None
5. Producing Wells: None
6. Drilling Wells: None

D. Location of Existing and/or Proposed Facilities if Well is Productive:

1. Facilities Required in the Event of Production on Well Pad:

   a. Location of Facilities:
   See Figure 5 for location of facilities. All facilities will be on the wellsite pad. Production facilities (including dikes) will be placed on the cut portion of the location (Figure 5).

   b. Dimension of Facilities:
   Production pad a maximum of 180' x 310' (See Figure 5). A heater treater will be located approximately 120' northeast of the well. Two 300 or 400 bbl. oil storage tanks will be located approximately 80' west of the heater treater and 120' north of the well. The dikes for the production facilities will be constructed of compacted subsoil, hold 1 1/2 times the capacity of the largest tank, and be independent of the back cut. That portion of the drilling pad that is not needed for production will be rehabilitated.

2. Facilities Required off Well Pad in the Event of Production:
   Upgrade and maintain access roads as necessary to prevent soil erosion and accommodate year-around traffic.

E. Location and Type of Water Supply: (See figure 1)

1. The water will be trucked from artesian wells located in Section 1-T38S-R24E. Permits will be obtained from the State Engineer.

2. The water source is not located on State land. Water will not be obtained from Indian projects.

3. A water well will not be drilled.

F. Construction Materials:

1. Native soil will be utilized in the drilling site and access road. Newly built access road (1.6 miles) will be graveled with pit run gravel if a producing well is obtained. Additional gravel may be needed for the pulling unit pad and wellsite if the well is found to be productive.

2. No construction material from Indian lands.

3. Crushed rock, if necessary, will be purchased from construction contractors in the area from existing gravel pits and hauled over access roads shown on Figures 1 & 2.

G. Methods for Handling Waste Disposal:

1. Cuttings:
   Reserve pit 75' x 125' x 10' (3:1 slope) fenced on three sides during drilling operations. The pit will be lined with 24 tons of bentonite worked in with a cat. The fourth side will be fenced when the rig moves out (See Figures 3-6).

2. Drilling Fluids:
   Reserve pit 75' x 125' x 10' (See figures 3 & 4). The reserve pit will be constructed to prevent the collection of surface runoff.

3. Produced Fluids:
   a. Recovered during drill-stem tests will be disposed of in a test tank.
   b. During completion, produced fluids will be contained in swab tanks (Figure 6.)
   c. Water disposal will be provided in accordance with BLM regulation NTL-2B.

4. Sewage:
   Porta potty with tank or portable sewage treatment plant (i.e. On Site Sewage Treatment, Inc.) capacity of 700 gal/day of treated water disposed of into reserve pit. Any other sewage will be removed from the location by a commercial service. Sewage treatment plant will be used for on-site trailers.

5. Garbage and Trash:
   a. An enclosed trash bin will be utilized.
   b. Engine oil and lubricants will be collected in containers.

6. Clean-up of Wellsite Area after Rig is removed
   a. Trash will be carried off site for disposal.
   b. All pits and wellsite will be covered, leveled and reseeded as per BLM instructions.

H. Ancillary Facilities: None.

I. Wellsite Layout:

1. Cross section: See Figure 3 for elevations and cross section. Maximum cut is approximately 5' at the west side of the drilling pad. Maximum fill is 4.5' at the south corner of the drilling pad.

2. Orientation of rig, pits and associated equipment (See Figure 4).

3. Six inches of topsoil will be removed from the location (drilling pad) including areas of cut and fill. Soil will be stockpiled adjacent to the wellsite pad (See Fig.3).

4. Access road, living facilities, parking area, etc. (See Figure 4).

J. Plans for Restoration of Surface:

1. All pits will be backfilled, leveled and contoured to as near the current condition as is practical.

2. Revegetation and rehabilitation of the wellsite and access road as per BLM specifications.

3. All pits will be fenced until dry and then backfilled.

4. If oil is present on the reserve pit, overhead flagging will be installed.

5. Rehabilitation will be commenced when the rig moves out with the location restored by Fall, 1996. Complete fall seeding after September, 1996 and prior to ground frost. Rehabilitation will be completed by November 1, 1997.

K. Surface Ownership:

1. Access roads:
   See Figures 1 & 2 Bureau of Land Management (on lease) and Guy Tracy. An easement has been obtained from Guy Tracy across portions of Section 25-T37S-R24E.

2. Well Location:
   Bureau of Land Management - See Figures 1 & 2.

L. Other Information:

1. a. BLM to be notified 48 hours prior to starting dirtwork.
   b. Wellsite and access road are located in arid, sandy, hilly terrain.
   c. Soil is shallow, sandy, and silty.
   d. Vegetation consists of very sparse native grasses and sparse sagebrush, and small trees.
   e. The area is a natural habitat for wildlife (i.e., deer, antelope, rabbits, etc.).

2. Livestock were grazing in the area when the wellsite was visited.

3. a. Intermittent streams (i.e., flow during wet seasons of the year) do exist in the area

   b. There are no occupied buildings within one mile of the proposed wellsite.

   c. Historical, cultural and archeological survey has been conducted by 4 Corners Archeological Services. No cultural or archaeological evidence was discovered in the area of the access road and wellsite. Due to the possibility of buried archeological features, an Archeological Monitor will be present during the construction of the road and location.

M. Lessee's or Operators Representative and Certification:

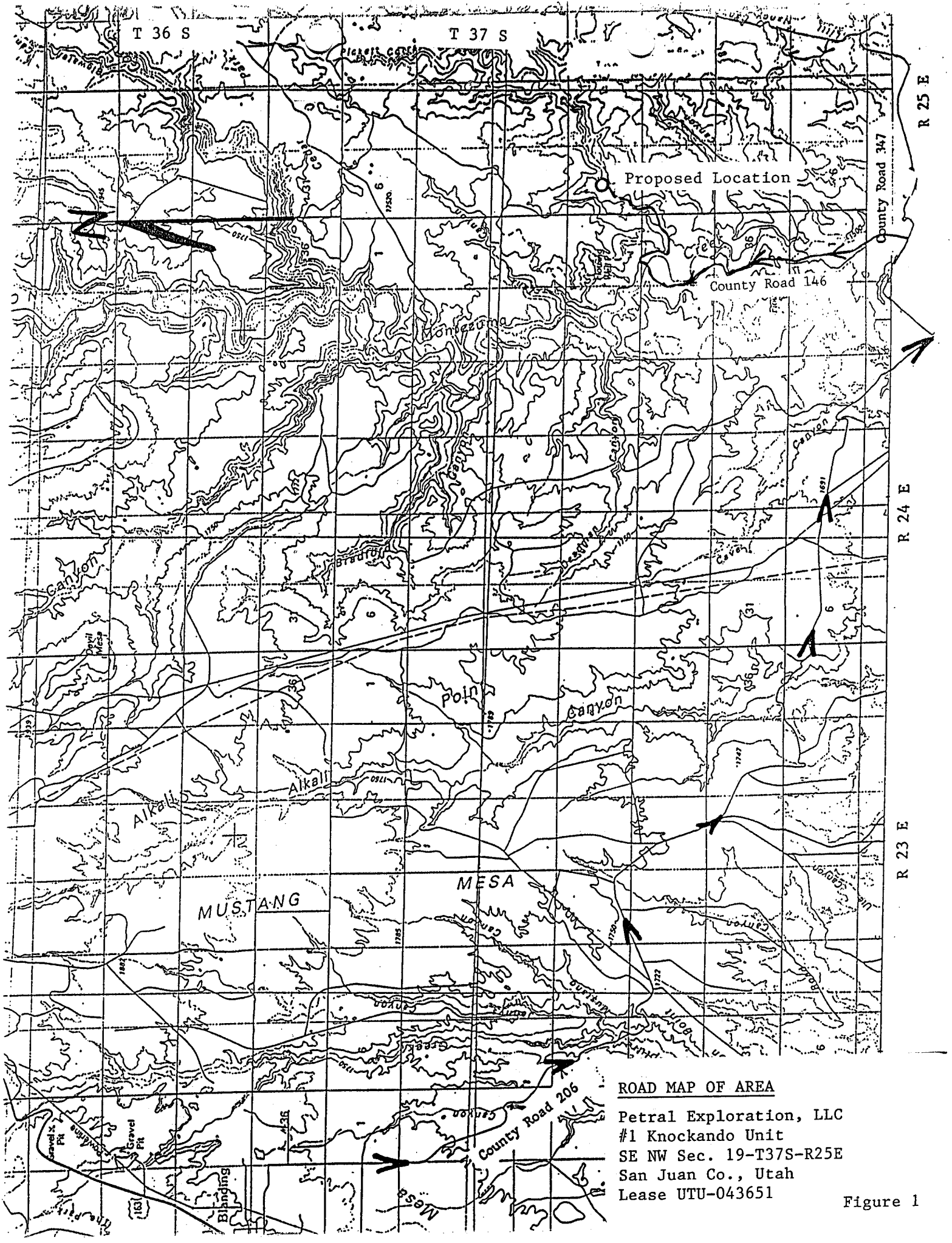
Operator
Petral Exploration, LLC----------(303) 832-3131
P. O. Box 5083
Denver, CO 80202

Representative
McIlnay & Associates, Inc.----------(307) 265-4351
2305 Oxford Lane
Casper, WY 82604

I hereby certify that I or persons under my direct supervision, have inspected the proposed drillsite and access route, that I am familiar with the conditions which currently exist; that the statements made in this plan are to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Petral Exploration, LLC and its' contractors and sub-contractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date

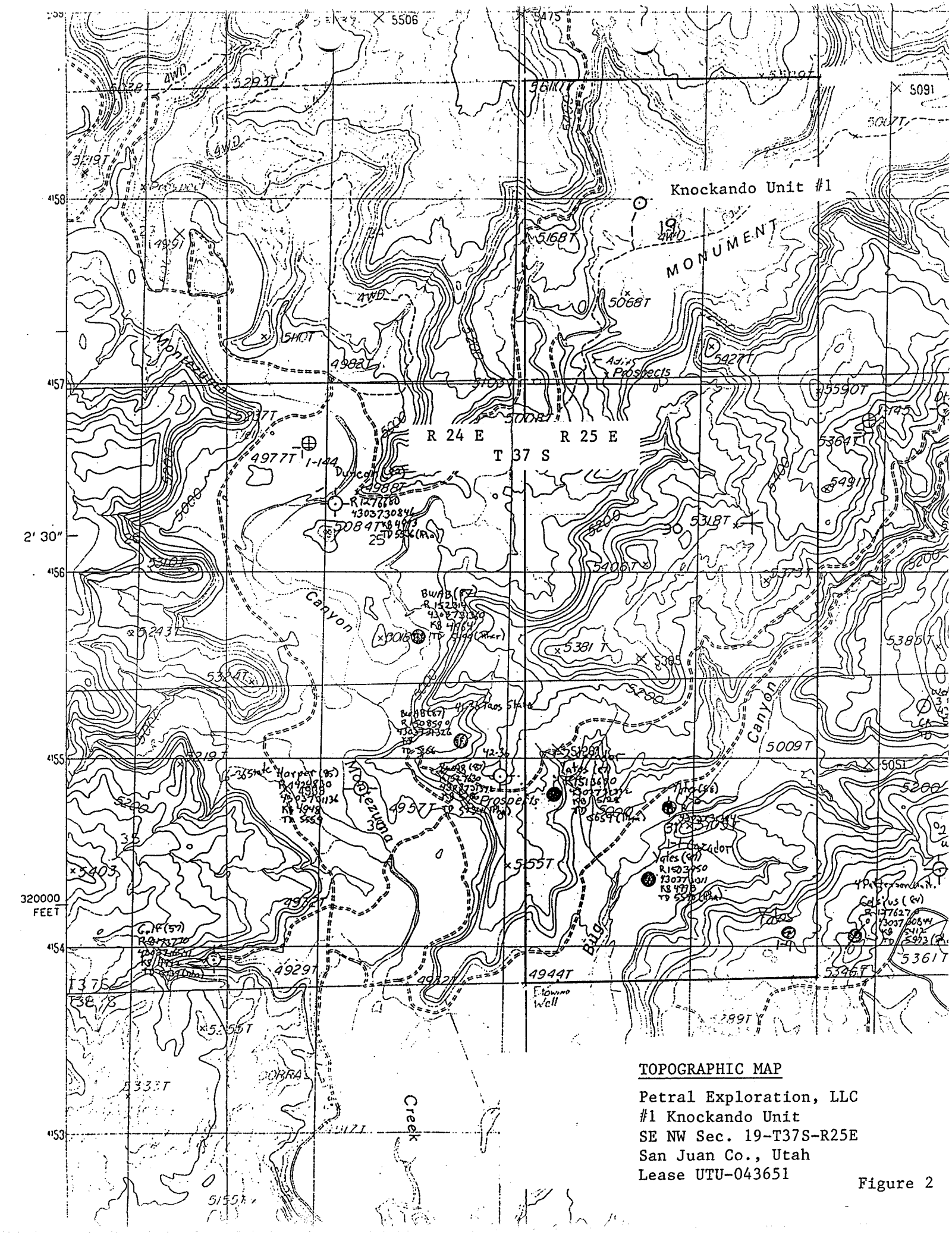
Petral Exploration, LLC, Petroro Corp., Manager
Anthony R. Mayer, Senior Vice President



ROAD MAP OF AREA

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

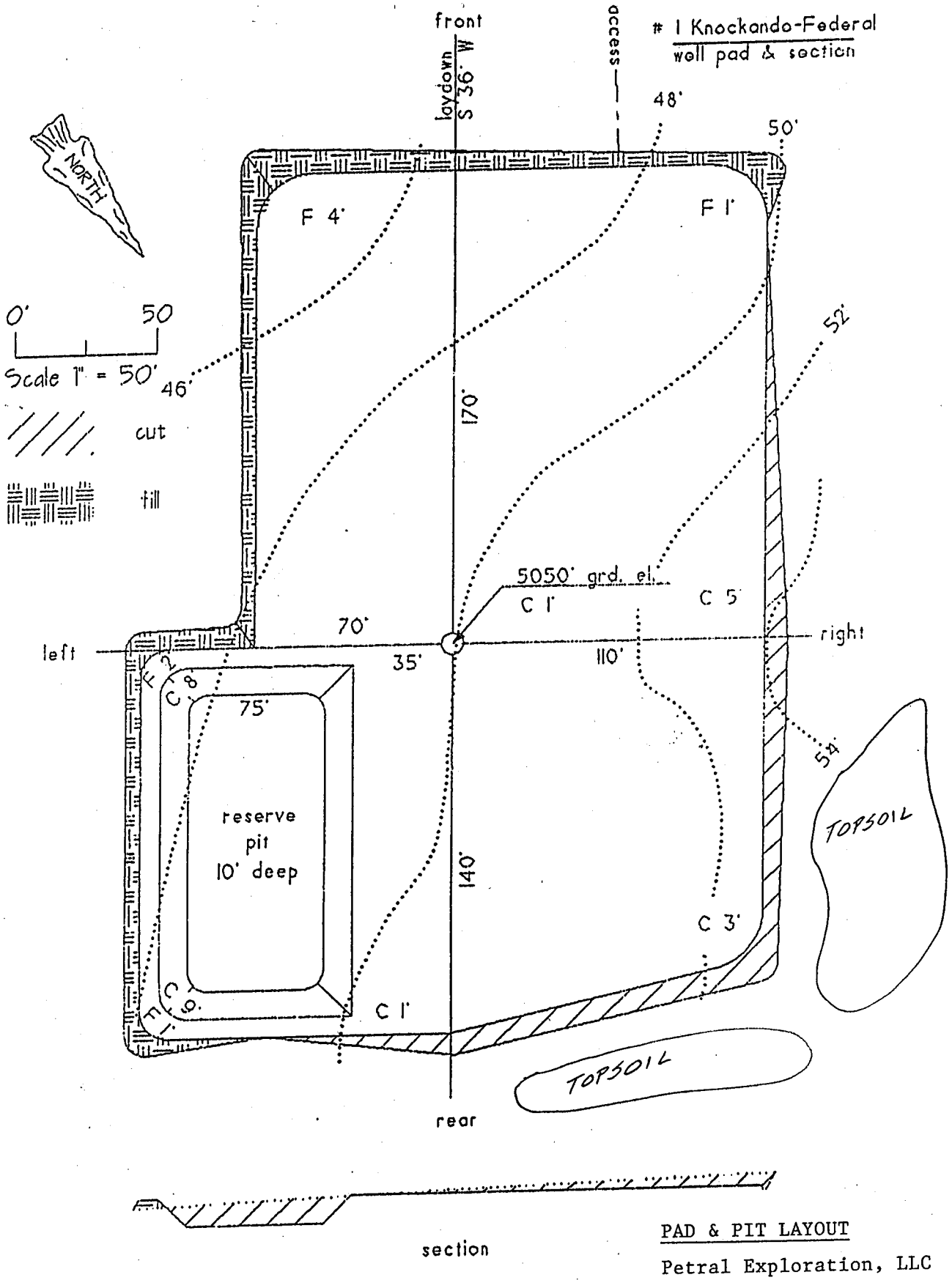
Figure 1



TOPOGRAPHIC MAP

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

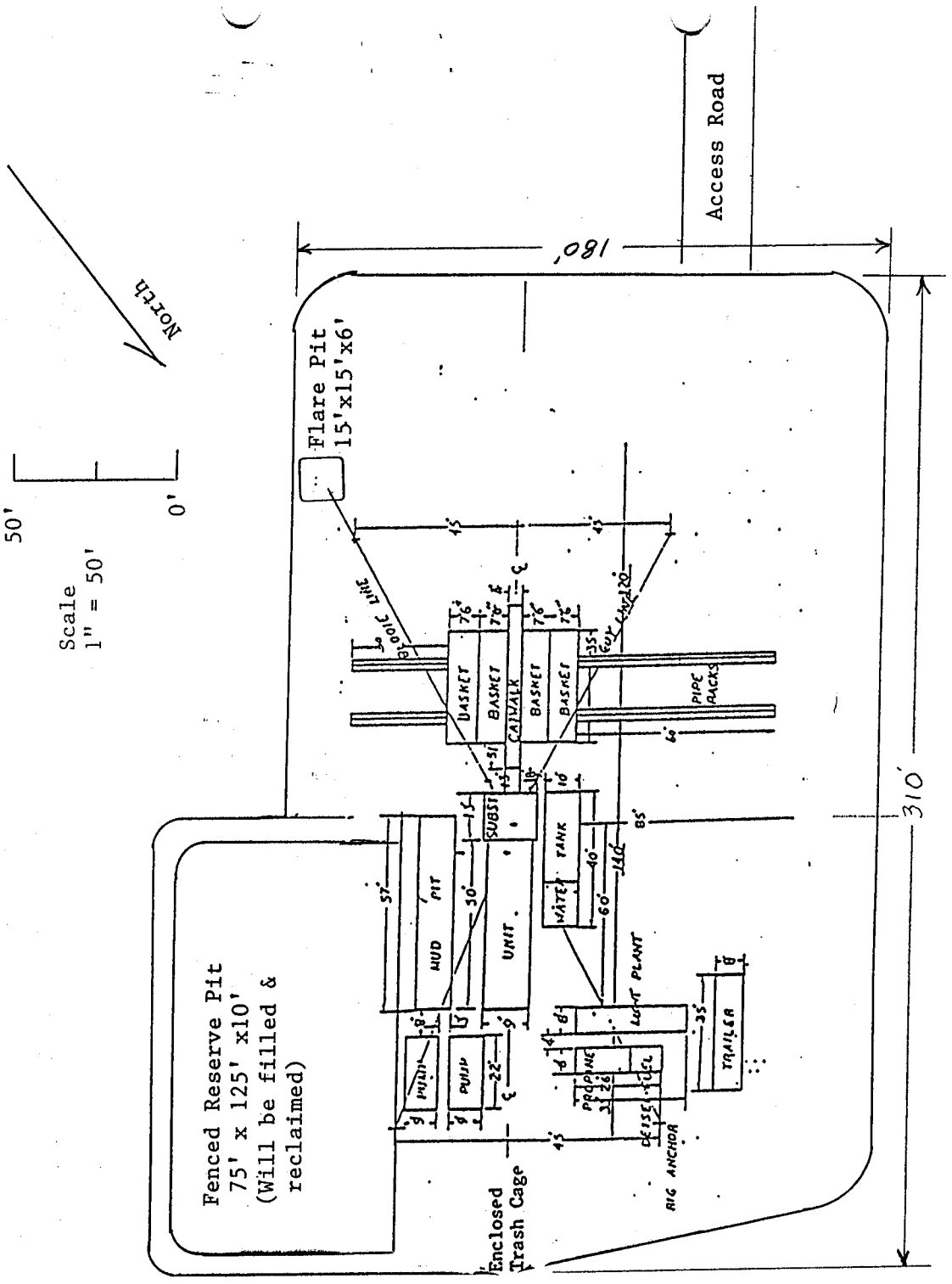
Figure 2



PAD & PIT LAYOUT

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

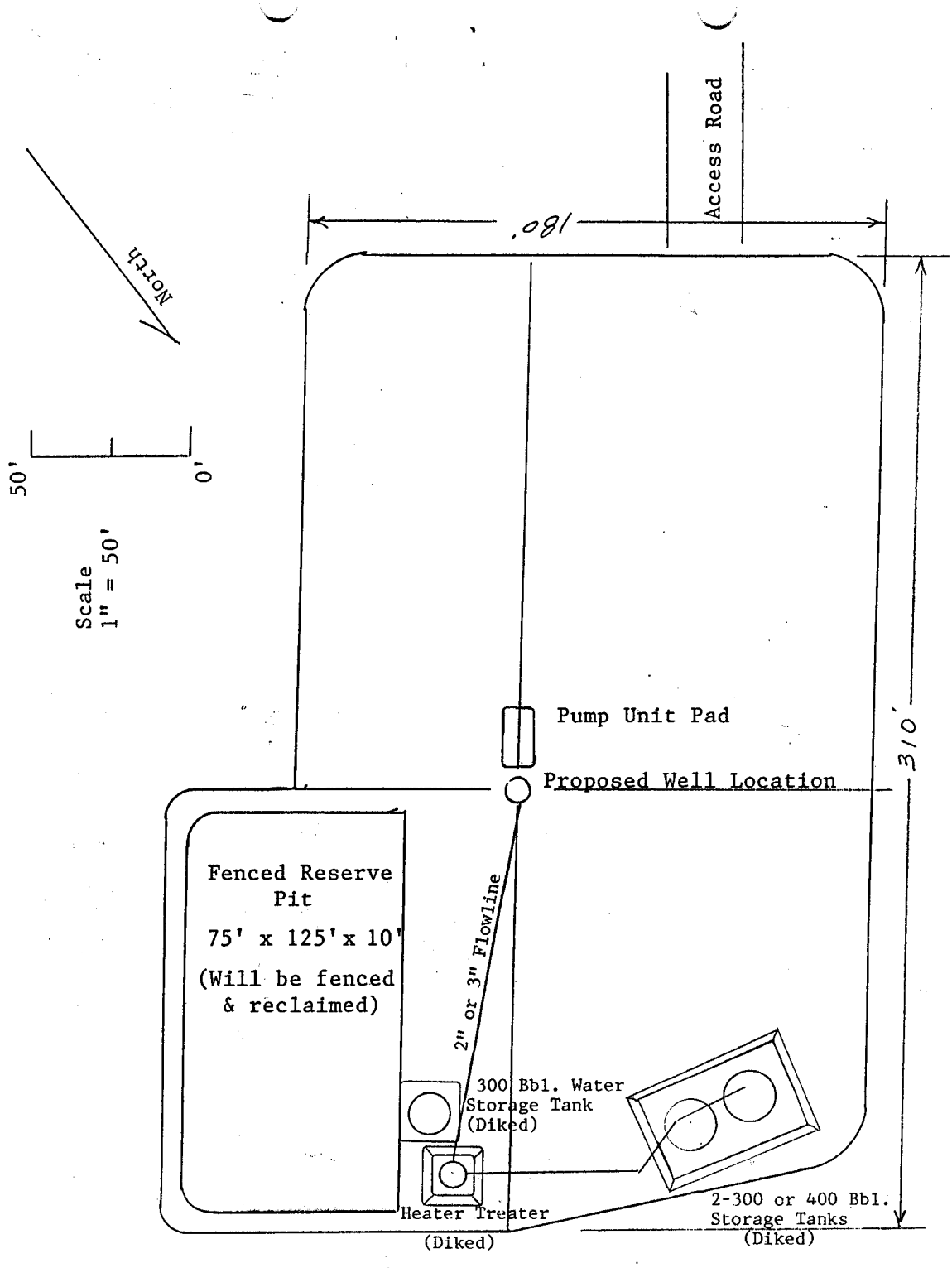
Figure 3



RIG LAYOUT

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

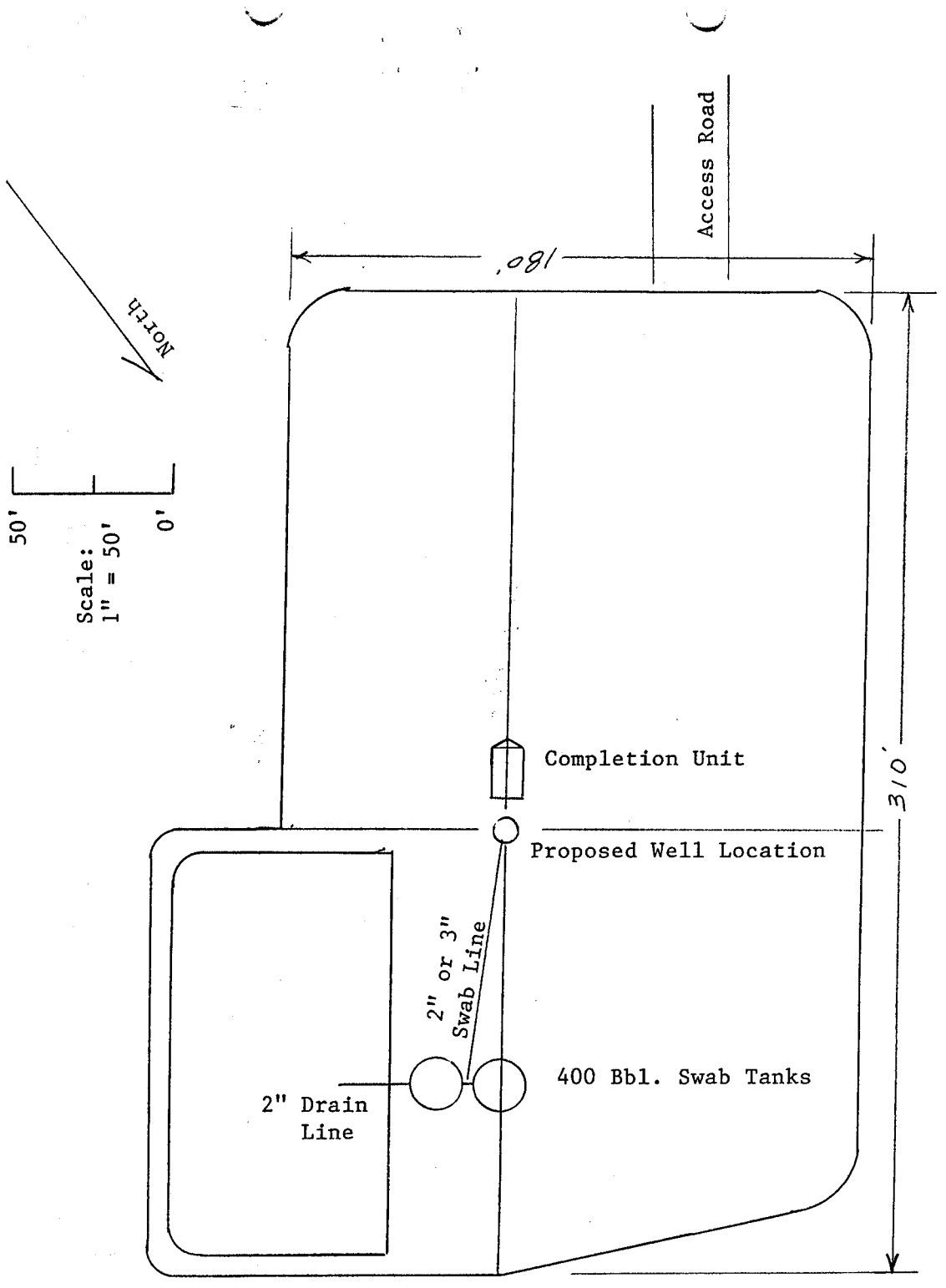
Figure 4



PRODUCTION FACILITIES

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

Figure 5



COMPLETION LAYOUT

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651

Figure 6

APPLICATION FOR TEMPORARY CHANGE OF WATER

STATE OF UTAH

MAR 4

Rec. by _____
Fee Paid $ _____
Receipt # _____
Microfilmed _____
Roll # _____

For the purpose of obtaining permission to make a temporary change of water in the State of Utah, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of Section 73-3-3 Utah Code Annotated 1953, as amended.

*WATER RIGHT NO. 09 - 156 *APPLICATION NO. t t19778

Changes are proposed in (check those applicable)

_____ point of diversion. X place of use. X nature of use. X period of use.

1. OWNER INFORMATION

Name: R.W. Trucking *Interest: ____%

Address: P.O. Box 1208

City: Cortez State: Colorado Zip Code: 81321

2. *PRIORITY OF CHANGE: December 10, 1951 *FILING DATE: March 4, 1996

3. RIGHT EVIDENCED BY: 09-156 (A23462; a5076) Cert. No. 7854

Prior Approved Temporary Change Applications for this right: _____

********** HERETOFORE **********

4. QUANTITY OF WATER: 0.364 cfs and/or _____ ac-ft.
5. SOURCE: Underground Water Well
6. COUNTY: San Juan
7. POINT(S) OF DIVERSION:

N. 531 ft. & E. 1810 ft. from W¼ Cor. Sec. 1, T38S, R24E, SLB&M

Description of Diverting Works: 4-inch casing, 538 feet deep

8. POINT(S) OF REDIVERSION

The water has been rediverted from _____ at a point: _____

Description of Diverting Works: _____

9. POINT(S) OF RETURN

The amount of water consumed is 0.364 cfs or _____ ac-ft.

The amount of water returned is _____ cfs or _____ ac-ft.

The water has been returned to the natural stream/source at a point(s): _____

*These items are to be completed by the Division of Water Rights.

10. NATURE AND PERIOD OF USE
Irrigation: From March 1 to October 31
Stockwatering: From ____ to ____
Domestic: From ____ to ____
Municipal: From ____ to ____
Mining: From ____ to ____
Power: From ____ to ____
Other: From ____ to ____

11. PURPOSE AND EXTENT OF USE
Irrigation: 80.4 acres. Sole supply of ____ acres.
Stockwatering (number and kind): ____
Domestic: ____ Families and/or ____ Persons.
Municipal (name): ____
Mining: ____ Mining District in the ____ Mine.
Ores mined: ____
Power: Plant name: ____ Type: ____ Capacity: ____
Other (describe): ____

12. PLACE OF USE
Legal description of place of use by 40 acre tract(s): ____
SW¼NE¼, SE¼NW¼, NE¼SW¼, W½SE¼ Sec. 1, T38S, R24E, SLB&M

13. STORAGE
Reservoir Name: ____ Storage Period: from ____ to ____
Capacity: ____ ac-ft. Inundated Area: ____ acres.
Height of dam: ____ feet.
Legal description of inundated area by 40 tract(s): ____

********** THE FOLLOWING CHANGES ARE PROPOSED **********

14. QUANTITY OF WATER: ____ cfs and/or 3.0 ac-ft.
15. SOURCE: Underground Water Well - Existing
Balance of the water will be abandoned: ____, or will be used as heretofore: X
16. COUNTY: San Juan
17. POINT(S) OF DIVERSION: Same as heretofore

Description of Diverting Works: 4-inch casing, 538 feet deep, portable pump and tank truck
COMMON DESCRIPTION: 9 miles North of Hatch Trading Post Bug Canyon Quad

18. POINT(S) OF REDIVERSION
The water will be rediverted from ____ at a point: ____

Description of Diverting Works: ____

19. POINT(S) OF RETURN
The amount of water to be consumed is ____ cfs or 3.0 ac-ft.
The amount of water to be returned is ____ cfs or ____ ac-ft.
The water will be returned to the natural stream/source at a point(s): ____

20. NATURE AND PERIOD OF USE

Irrigation: From __/__/__ to __/__/__

Stockwatering: From __/__/__ to __/__/__

Domestic: From __/__/__ to __/__/__

Municipal: From __/__/__ to __/__/__

Mining: From __/__/__ to __/__/__

Power: From __/__/__ to __/__/__

Other: From 3 / 1 /96 to 12/31 /96

21. PURPOSE AND EXTENT OF USE

Irrigation: ________ acres. Sole supply of ________ acres.

Stockwatering (number and kind): ________

Domestic: ______ Families and/or ______ Persons.

Municipal (name): ________

Mining: ________ Mining District at the ________ Mine.

Ores mined: ________

Power: Plant name: ________ Type: ______ Capacity: ______

Other (describe): Exploration drilling, road construction & maintenance, dust suppression

22. PLACE OF USE

Legal description of place of use by 40 acre tract(s):

1) Petral Fed. Aultmore #1: SE¼ Sec. 24, T37S, R24E, SLB&M

2) Petral Fed. Knockando #1: NW¼ Sec. 19, T37S, R25E, SLB&M

23. STORAGE

Reservoir Name: ________ Storage Period: from ______ to ______

Capacity: ______ ac-ft. Inundated Area: ______ acres.

Height of dam: ______ feet.

Legal description of inundated area by 40 tract(s): ________

24. EXPLANATORY

The following is set forth to define more clearly the full purpose of this application. Include any supplemental water rights used for the same purpose. (Use additional pages of same size if necessary):

The applicant is purchasing the water from the water right owner, Mr. Richard Gore. See attached letter.

****

The undersigned hereby acknowledges that even though he/she/they may have been assisted in the preparation of the above-numbered application through the courtesy of the employees of the Division of Water Rights, all responsibility for the accuracy of the information contained herein, at the time of filing, rests with the applicant(s).

Robert F McDonald

Signature of Applicant(s)

STATE ENGINEER'S ENDORSEMENT

TEMPORARY CHANGE APPLICATION NUMBER: t19778 WATER RIGHT NUMBER: 09-156

1. March 4, 1996 Change Application received.

2. March 4, 1996 Application designated for APPROVAL by MP.

3. Comments:

Conditions:
This application is hereby APPROVED, dated March 4, 1996, subject to prior rights and this application will expire on December 31, 1996.

Mark Page, Regional Engineer
for
Robert L. Morgan, State Engineer

TO: R.W. Trucking
P.O. Box 1208
Cortez, Colorado 81321

From: Richard W. Gore
Josephine M. Gore

Thank you for sending the description of the Point of Diversion for the well on our property in Utah.

You have our permission to use well water from the underground well in San Juan County, Utah.

N. 531 ft. & E. 1810 ft. from W¼ Cor. Sec. 1, T38S, R24E, SLB&M

If further information is needed, I will be staying at the cabin near the well in Utah.

Sincerely,

Richard W. Gore

Richard W. Gore

ARCHAEOLOGICAL SURVEY OF PETRAL EXPLORATION COMPANY'S #1 KNOCKANDO FEDERAL WELL PAD & ACCESS ROUTE SAN JUAN COUNTY, UTAH

4-CAS REPORT 9615

by
Carol S. DeFrancia

4-CORNERS ARCHAEOLOGICAL SERVICES
76 S. Main Street
Moab, Utah 84532
(801) 259-2777

May 27, 1996

FEDERAL ANTIQUITIES PERMIT 95UT62712
Utah State Permit No. U-96-FE-264b

Prepared For:
Petral Exploration
1700 Lincoln, Suite 5000
Denver, CO 80203

TABLE OF CONTENTS

LIST OF FIGURES

ABSTRACT

The archaeological survey of Petral Exploration Company's #1 Knockando Federal well pad and 1400' of access was conducted by personnel of 4-Corners Archaeological Services between May 17, and May 23, 1996. The project is located in the vicinity of Monument Canyon in San Juan County, Utah, approximately twelve to fifteen miles southeast of the town of Blanding. A total of 14.8 acres were inventoried for cultural resources.

No archaeological sites or cultural remains were found along the surface of the project area. There is, however, some potential for buried cultural deposits at this location, which is positioned in its' entirety along the floodplain of Monument Canyon. Past studies conducted in the general Montezuma Creek - Monument Canyon vicinity, specifically along the floodplain region, indicate a significant frequency of subsurface cultural remains (ie. pithouses and isolated features) that have been uncovered during excavations of pipeline and well pad projects.

Surface indications of cultural resources are not always apparent in these areas due to extensive depth of colluvial deposits present along the canyon bottoms. Also evident, less than 1000' southeast of the proposed location, is a sizable prehistoric pueblo situated along the interior and base of a canyon bench, and continuing downslope along the river floodplain. Because buried cultural deposits are a potential factor, even though there are no apparent surface indications, it is recommended that an archaeological monitor be present during all construction activities. If these measures are taken, then archaeological clearance would be the recommended procedure.

INTRODUCTION

The archaeological survey of Petral Exploration Company's proposed #1 Knockando Federal well pad and 1400' of access route was conducted by Carol DeFrancia of 4-Corners Archaeological Services between May 17, and May 23, 1996. The project is located along a floodplain of Monument Canyon (Figure 1) on lands administered by the Bureau of Land Management, San Juan Resource Area Office, Monticello. The survey was requested by Mr. Ed McIlnay, of McIlnay & Associates, Inc. Huddleston Surveying personnel staked and flagged the well pad prior to the survey. The proposed access route extends west and south of the well location and connects to an existing access road along Monument Canyon. A total of 14.8 acres were inventoried for cultural resources (Figure 2).

Principal federal legislation that is designed to conserve and protect cultural resources includes the Antiquities Act of 1906 (PL 52-209), the National Historic Preservation Act of 1966 (PL 89-665), the National Environmental Policy Act of 1969 (PL 91-190), the 1971 Executive Order No. 11593, the Archaeological and Historical Conservation Act of 1974 (PL 93-291), and the Archaeological Resource Protection Act (ARPA) of 1978 (PL 95-96).

No archaeological sites or cultural remains were found along the surface of the project area which is positioned along the floodplain of Monument Canyon.

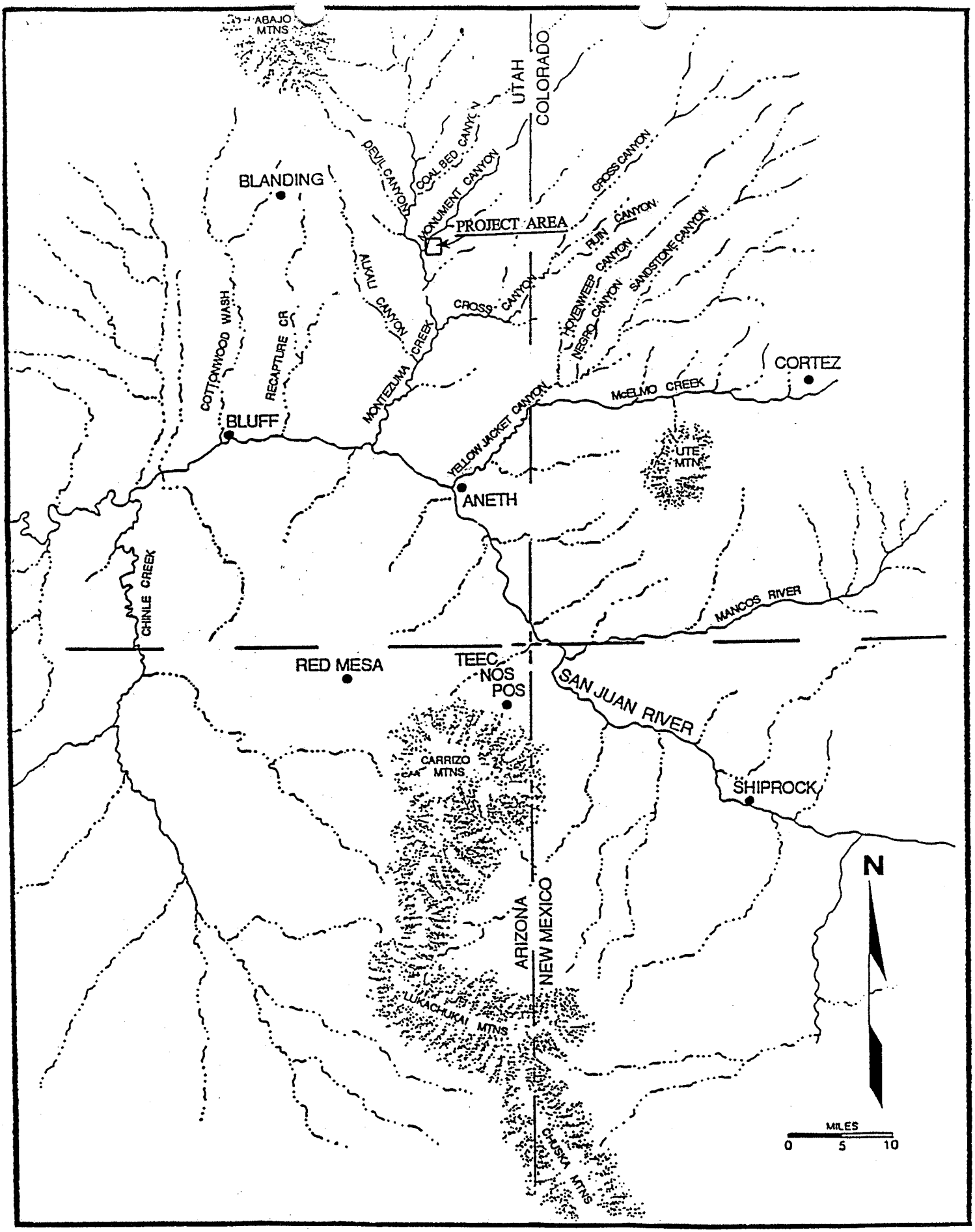
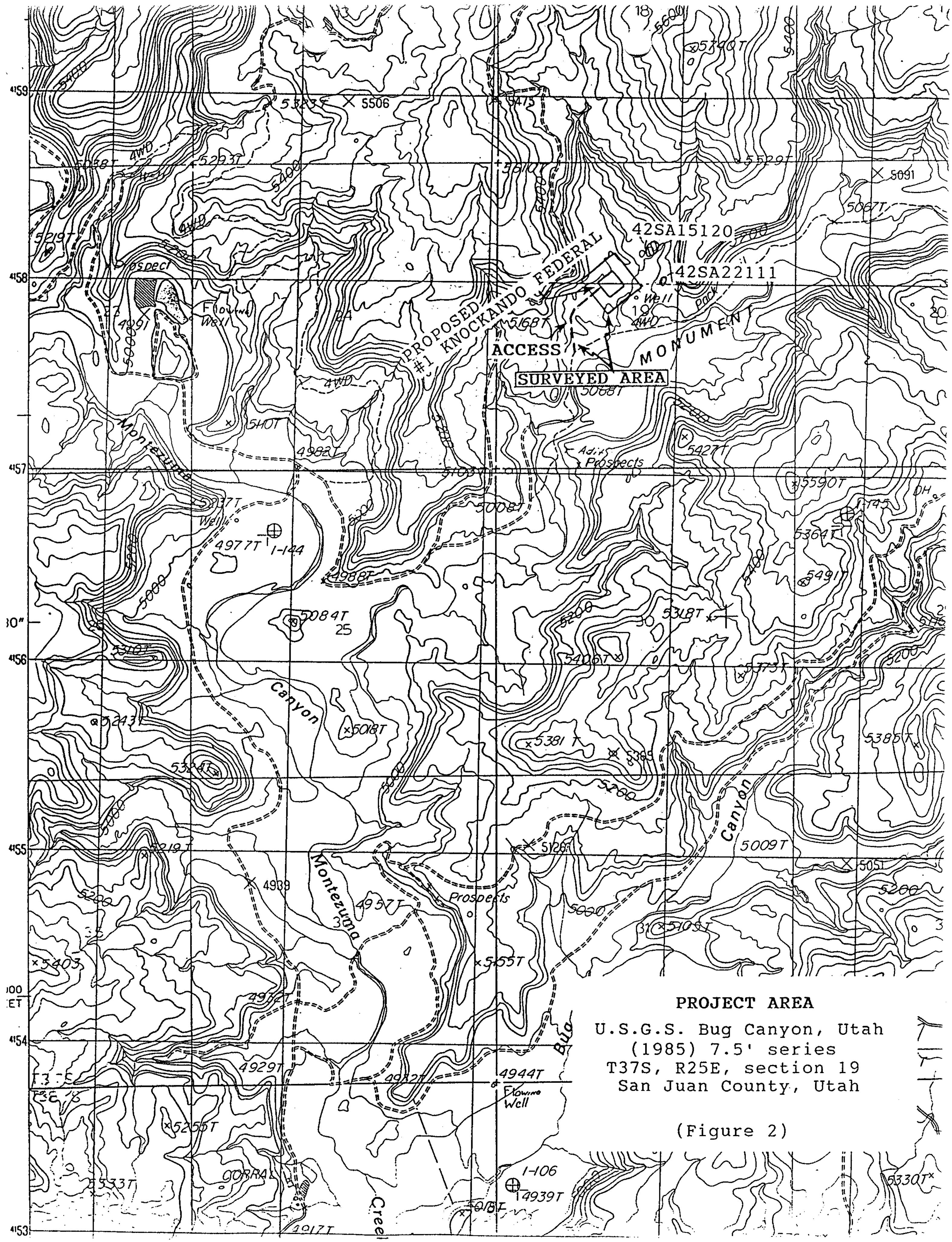


Figure 1. Project Area



PROJECT AREA

U.S.G.S. Bug Canyon, Utah
(1985) 7.5' series
T37S, R25E, section 19
San Juan County, Utah

(Figure 2)

PROJECT AREA

Map Reference: Bug Canyon, Utah 1985 (7.5' series)

Total Project Area: 3.4 acres; area surveyed 14.8 acres

#1 Knockando Federal Well Pad

Legal Description: T37S, R25E: Section 19

Center Stake: 2170' FNL, 2000' FWL (surface hole)

UTM Coordinates: (Surveyed Area)

	Easting	Northing
NW Corner	657480	4158020
NE Corner	657650	4158160
SE Corner	657800	4157990
SW Corner	657620	4157840

Project Area: Well Pad 210 x 305'; (1.4 acres)

Surveyed Area: 660 x 660' (10 acres)

Results: No cultural resources found.

Well Pad Access

Legal Description: Section 19, T37S, R25E: SE/NW, NE/SW

UTM Coordinates:

	Easting	Northing
SW End	657460	4157640
Bend	657440	4157850
NE End	657610	4157980

Project Area: 1400' long, maximum 60' wide (1.9 acres)

Surveyed Area: 1400' x 150' (4.8 acres)

Results: No cultural resources found

PHYSIOGRAPHY AND ENVIRONMENT

The project area is located in San Juan County, Utah approximately twelve to fifteen miles southeast of the town of Blanding, in the bottom of Monument Canyon. The area lies in the Colorado Plateau physiographic province and is a structural element of the Blanding Basin (Stokes 1977). The proposed well pad and access route lies in its' entirety along the floodplain of Monument Canyon. Small ephemeral drainages flank the east and southeast sides of the pad. Terrain in the area is generally flat with deep alluvial sandy loess and colluvial fill across the floodplain.

Throughout the Blanding Basin are numerous sources of lithic materials for tool manufacture, outcrops of clay and iron minerals for ceramic construction and decoration, and an abundance of sandstone available for construction and other materials important to the areas prehistory.

Vegetation along the floodplain is predominately a cold desert shrub association including sagebrush, greasewood, saltbush, shadscale, russian thistle, Indian ricegrass, and occasional juniper. A pinyon-juniper woodland is prevalent at higher elevations along the canyon bench and ridges. Cottonwood, tamarisk, and willow are common riparian species found along the floodplain of Monument Canyon.

Permanent water sources are available in numerous springs and seeps in the heads of Monument Canyon. One developed spring lies less than 500' southeast of the project area. Montezuma Creek, which lies approximately one and one-half mile west, generally holds water for several months throughout the late winter/spring season.

Reptilian, avian, and mammalian associations are consistent with those of the Upper Sonoran Life Zone throughout the Colorado Plateau.

Currently, most of the area is used for cattle grazing and limited oil and gas development.

PREVIOUS RESEARCH

A file search was conducted on May 17, 1996 at the BLM San Juan Resource Area Office in Monticello. The results of the review indicated that a large number of oil and gas related surveys have been conducted in the vicinity between the late 1970's and 1980's and that several archaeological sites (10+) are documented within one to three miles from the project area, predominatly near the confluence of Montezuma Creek and Monument Canyon. One early prehistoric isolated structure and artifact scatter (42SA22111) lies approximately 1000' east of the proposed location and site 42SA15120, a probable PI habitation, lies ca. 1100' northeast of the location. Both are situated along the canyon bench area. Apart from smaller energy-related surveys (4-CAS Reports 9319, 9327, & 9329), an extensive seismic survey (4-CAS Report 9115) was conducted in the general project vicinity less than one-quarter mile northeast, northwest and southeast of the project area. More recently, a 3-D seismic program was also conducted in the general vicinity (JBR; 1995) and also increased the site inventory of the area. Site types affiliated with the Anasazi occupation of the area range from lithic scatters and small isolated features to larger prehistoric habitations and village-size settlements.

EXAMINATION PROCEDURES

Prior to the field investigations the well pad and access were staked and flagged. A 660 x 660' area surrounding the well center stake (10 acres) was inventoried by walking a series of parallel transects spaced 15m apart. Two parallel zig-zag transects were walked along the access route, covering a 150' wide corridor. This effectively gives a minimal 60' buffer on either side of the access road.

SURVEY RESULTS

No archaeological sites or cultural remains were found along the surface of the project area which is positioned along the floodplain of Monument Canyon.

CONCLUSION AND RECOMMENDATIONS

The archaeological survey of Petral Exploration Company's #1 Knockando Federal well pad and 1400' of access was conducted by personnel of 4-Corners Archaeological Services between May 17, and May 23, 1996. The project is located in the vicinity of Monument Canyon in San Juan County, Utah, approximately twelve to fifteen miles southeast of the town of Blanding. A total of 14.8 acres were inventoried for cultural resources.

No archaeological sites or cultural remains were found along the surface of the project area. There is, however, some potential for buried cultural deposits at this location, which is positioned in its' entirety along the floodplain of Monument Canyon. Past studies conducted in the general Montezuma Creek - Monument Canyon vicinity, specifically along the floodplain region, indicate a significant frequency of subsurface cultural remains (ie. pithouses and isolated features) that have been uncovered during excavations of pipeline and well pad projects.

In particular, and of historic note, is the Chaparral 1-L well pad (1993), alias Cazador Unit 3-1 (1987), which is located aproximately three miles southwest of the project area along the Montezuma Creek floodplain. Evidence of buried cultural deposits were exposed during construction of the well pad, ca. four feet below the modern ground surface. Sites 42SA17440 and 42SA17441, early to late Basketmaker period sites, were also discovered during the construction of a pipeline right-of-way that extended along the west side of Montezuma Creek road. Both sites were fully excavated in 1986 (Hovezak and Harden, LAC Report 8598a & b).

Surface indications of cultural resources are not always apparent in these areas due to extensive depth of colluvial deposits present along the canyon bottoms. Also evident, less than 1000' southeast of the proposed location, is a sizable prehistoric pueblo situated along the interior and base of a canyon bench, and continuing downslope along the river floodplain. Because buried cultural deposits are a potential factor, even though there are no apparent surface indications, it is recommended that an archaeological monitor be present during all construction activities. If these measures are taken, then archaeological clearance would be the recommended procedure.

REFERENCES

DeFrancia, Carol S.

1993 Archaeological Survey of Sunfield Energy Company's Chaparral 1-L Directional Well (Re-Survey of Cazador Unit #3-1), San Juan County, Utah. 4-CAS Report 9319, Cortez.

1993 Archaeological Survey of Sunfield Energy Company's North Patterson 25-A Well Pad and Access Route, San Juan County, Utah. 4-CAS Report 9327, Cortez.

1993 Archaeological Survey of Sunfield Energy Company's Chaparral 2-A Well Pad and Access Route, San Juan County, Utah. 4-CAS Report 9329, Cortez.

1991 Archaeological Survey of Century Geophysical's North Patterson Seismograph Lines (91-NP-1 through 91-NP-14) San Juan County, Utah. 4-CAS Report 9115, Cortez.

Harden, Patrick L.
1987 Archeological Monitoring Yates Petroleum Corporation's 3-1 Cazador Well Pad Construction, San Juan County, Utah. LAC Report No. 8745A, Dolores.

Hibbets, Barry N.
1987 An Archeological Survey of Yates Petroleum Corporation's Cazador Unit #3-1 Well Site, San Juan County, Utah. LAC Report 8732, Dolores.

Hovezak, T. and P. Harden
1986(a) Excavations at 42SA17441, A Basketmaker III Specialized Activity Site, San Juan County, Utah. LAC Report 8598a, Dolores.

Hovezak, T. and P. Harden
1986(b) Excavations at site 42SA17440, A Basketmaker II Specialized Activity Site, San Juan County, Utah. LAC Report 8598b, Dolores.

Moore, Michele, Jenni Prince-Mahoney, and Scott Billat
1995 An Archaeological Inventory of 51 Miles of 3-D Seismic Program Across Montezuma Canyon, San Juan County, Utah. JBR Cultural Resource Report 95-16, Sandy.

Stokes, William Lee
1987 Geology of Utah. Occasional Paper Number 6. Utah Museum of Natural History, University of Utah, Salt Lake City.

McILNAY & ASSOCIATES, INC.

McILNAY

2305 OXFORD LANE • CASPER, WY 82604 • (307) 265-4351 • FAX (307) 473-1218

PETROLEUM CONSULTING ENGINEERS & PROPERTY MANAGEMENT

REGISTERED PROFESSIONAL ENGINEERS

June 11, 1996

San Juan County Road Department
P. O. Box 188
Monticello, Utah 84535

Re: Application for Right-of-Way Encroachment Permit for
Access Route to Petral Exploration, LLC., San Juan Co., Well
1. Knockando Unit #1, SE NW NE Sec. 19-T37S-R25E
2. #1 Aultmore Federal, NW NE SW Sec. 24-T37S-R24E

Dear Sir or Madam:

On behalf of our client, Petral Exploration, LLC, enclosed is our application for the subject Right-of-Way Encroachment Permit.

Please advise if you need additional information.

Very truly yours,

McILNAY & ASSOCIATES, INC.

Ken Kidneigh,
Engineer

KK/so

Attachment

SAN JUAN COUNTY ROAD DEPARTMENT
835 East Highway 666
Post Office Box 188
Monticello, Utah 84535
(801) 587-3230

Application for Right-of-Way Encroachment Permit

Date June 11, 1996

TO: San Juan County Surveyor/Engineer
Post Office Box 188
Monticello, Utah 84535

Application is hereby made by: (1) Petral Exploration, LLC
c/o McIlnay & Associates, Inc.
Address (2) 2305 Oxford Lane, Casper, WY 82604

Telephone Number: (307) 265-4351 for permission to do the following: (3) Move in a drilling rig and other equipment as needed for drilling, completing and producing 2 wells located in the SE NW Section 19-T37S-R25E, & NW NE SW Sec. 24-T37N-R24E San Juan Co., Utah, utilizing County Roads 206 & 146.

(4) Location:

As above

City Blanding County San Juan State Utha

or U.S. Highway No. NA Milepost No. NA in accordance with the attached plan. (5)

(6) Construction will begin on or about NA 19____ and will be completed on or before_____ 19____.

If the proposed installation requires breaking of the pavement, give the following information:

a. Type of pavement: NA

b. The opening to be made will be _____ feet long by _____ feet wide and _____ feet deep.

c. A bond in the amount of $_____ has been posted with _____ Telephone No._____ to run of a term of three (3) years after completion of work to guarantee satisfactory performance.

(7) If this permit is granted, we agree to comply with all conditions, restriction, and regulations as contained in the "Regulations for the Control and Protection of State Highway

Rights-of-Way", approved by the Utah State Road Commission of October 8, 1962, and all revisions thereto or Regulations adopted by the San Juan County Commission.

(8) In approving this application and locations of utilities, and effort will be made to approve only locations that will not be affected in the event that San Juan County changes the roadway. But, in situations in which the utility has to be moved, this moving shall be done by the utility company or paid for by the company.

(9) For any and all applications requesting authority to use vibratory equipment, applicants shall:

a. Provide map showing where vibrations will take place.

b. Agree to repair any damages or replace any property damaged.

c. Take full responsibility for proper flagging and traffic control.

d. Agree that vibrating done in the area of dirt roads shall be done on the dirt road rather than in the bar ditch to minimize damage.

e. Provide a schedule of the planned work and estimated dates of completion.

f. Attach written permission from all adjacent fee-title owners.

g. The San Juan County commission has authorized the San Juan County Surveyor/Engineer (or his Assignees) to issue permits.

(10) San Juan County can only grant permission to the extent that the County has the authority to do so and the permission granted hereunder is limited to the interest of authority actually owned by San Juan County and no warranties of ownership or authority to grant permission is expressed or implied by the granting of this permit.

BY: Ken Kidneigh, McInay & Associates, Inc.
Representative for Petral Exploration, LLC
TITLE

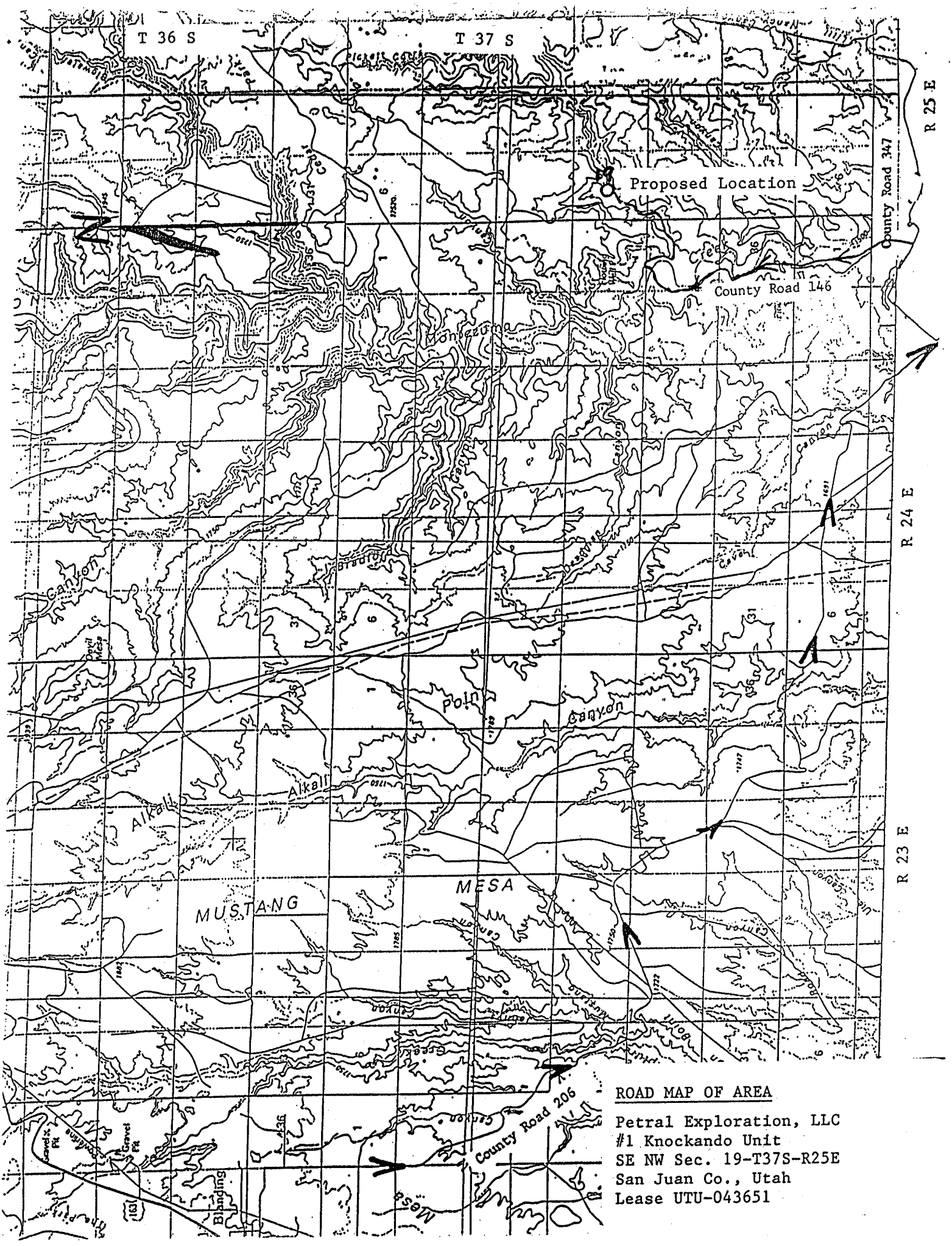
To be filled in by San Juan County Surveyor/Engineer.

(1) Permit should be granted_____

Permit should not be granted_____

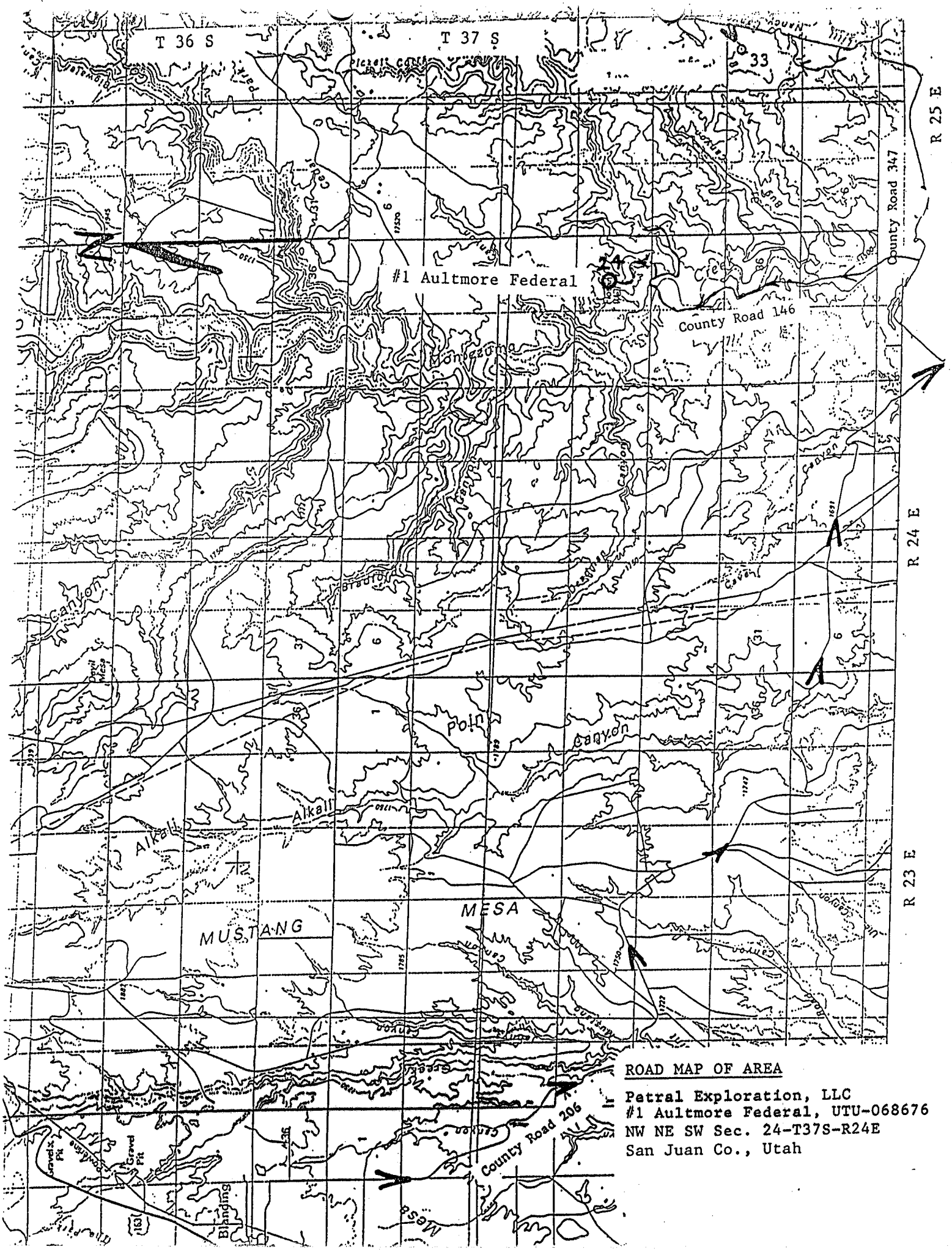
(2) Additional requirements which should be imposed_____.

SAN JUAN COUNTY SURVEYOR/ENGINEER



ROAD MAP OF AREA

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651



ROAD MAP OF AREA

Petral Exploration, LLC
#1 Aultmore Federal, UTU-068676
NW NE SW Sec. 24-T37S-R24E
San Juan Co., Utah

McILNAY & ASSOCIATES, INC.

2305 OXFORD LANE • CASPER, WY 82604 • (307) 265-4351 • FAX (307) 473-1218

PETROLEUM CONSULTING ENGINEERS & PROPERTY MANAGEMENT

REGISTERED PROFESSIONAL ENGINEERS

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Ken Kidneigh,
Engineer

KK/so

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BY: Ken Kidneigh, McInnay & Associates, Inc.
Representative for Petral Exploration, LLC
TITLE

To be filled in by San Juan County Surveyor/Engineer.

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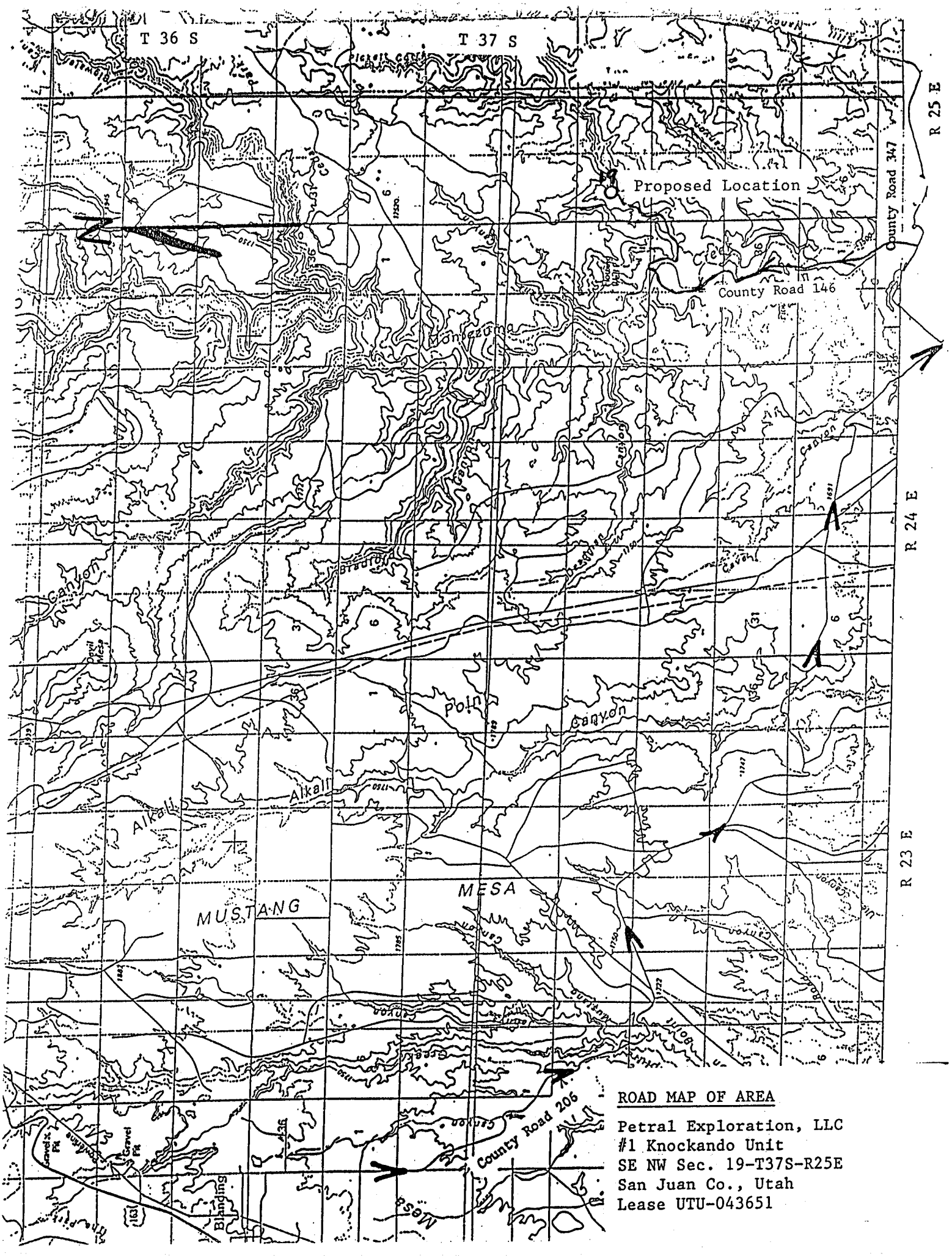
Permit should not be granted_____

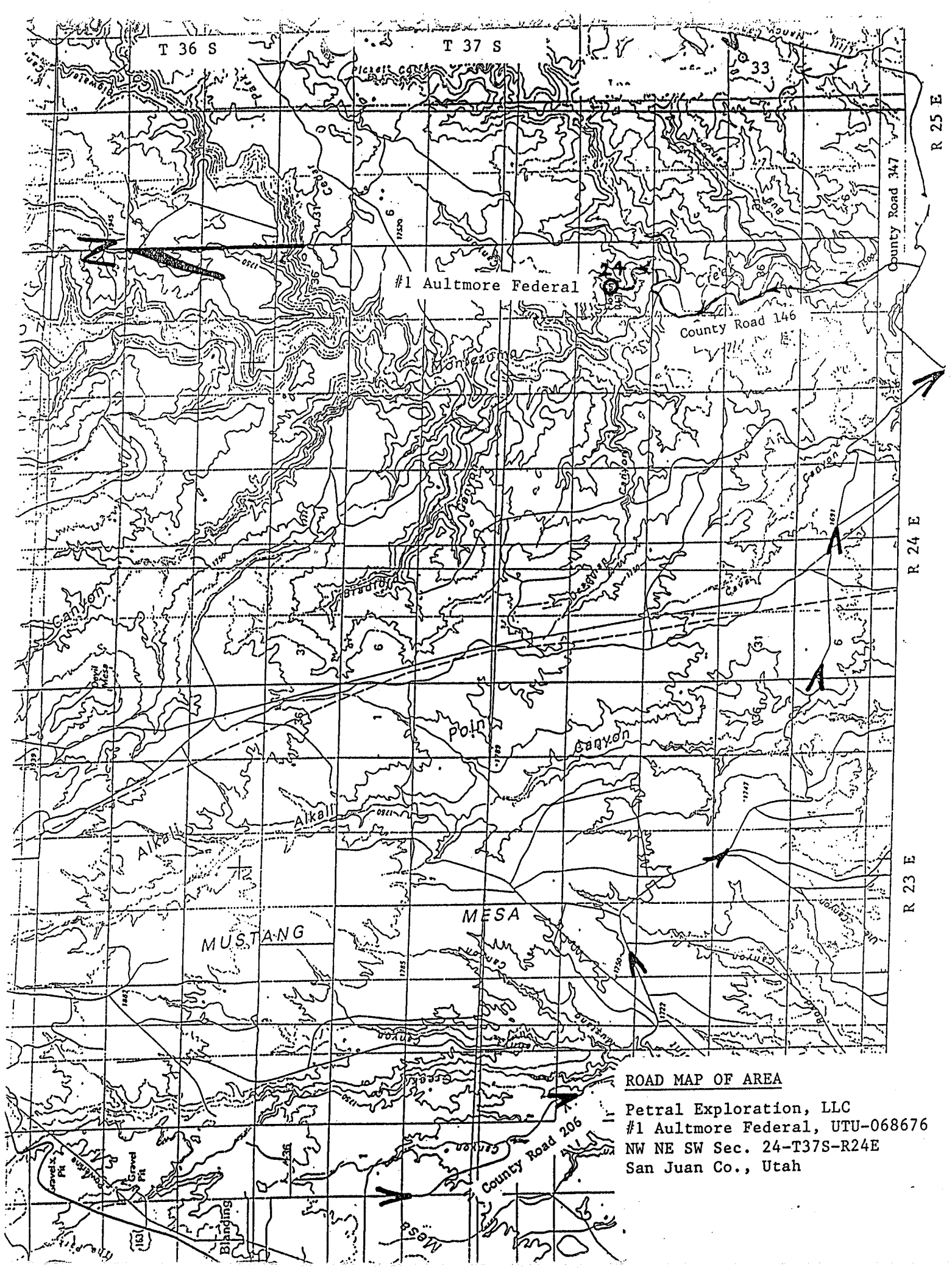
(2) Additional requirements which should be imposed_____.

SAN JUAN COUNTY SURVEYOR/ENGINEER



ROAD MAP OF AREA

Petral Exploration, LLC
#1 Knockando Unit
SE NW Sec. 19-T37S-R25E
San Juan Co., Utah
Lease UTU-043651



ROAD MAP OF AREA

Petral Exploration, LLC
#1 Aultmore Federal, UTU-068676
NW NE SW Sec. 24-T37S-R24E
San Juan Co., Utah

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form Approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]	5. LEASE DESIGNATION AND SERIAL NO.: UTU-043651
b. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] OTHER — SINGLE ZONE [X] MULTIPLE ZONE [ ]	6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA
	7. UNIT AGREEMENT NAME: Knockando
2. NAME OF OPERATOR: Petral Exploration, LLC	8. FARM OR LEASE NAME: Knockando Unit
3. ADDRESS OF OPERATOR: c/o McIlnay & Associates, INc. 2305 Oxford Lane, Casper, WY 82604	9. WELL NO.: #1
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*) At surface: 2170' FNL & 2000' FWL (SE NW) Sec. 19-37S-25E	10. FIELD AND POOL, OR WILDCAT: Wildcat
At proposed prod. zone: Same	11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 19-T37S-R25E, SLM
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: Approximately 15 miles SE of Blanding, UT	12. COUNTY OR PARISH: San Juan / 13. STATE: UT

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
Lease 2000' Unit 3050'	1872.48	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
10,650' Abd. Producer	5493'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5050 GR, 5061' KB (est.)

22. APPROX. DATE WORK WILL START*:

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
20"	16"	0.25 Wall	80'	To surface
12 1/4"	8 5/8"	24#/ft	1335'	To surface
7 7/8"	5 1/2"	15.5#/ft.	5493'	220 sks.

Request is made for all information to be held CONFIDENTIAL.

It is proposed to drill a well at the above location with the primary zone of interest the Upper Ismay Mound formation at 5209' TVD. If the well proves productive, 5 1/2" casing will be cemented in place and the well completed. If the well is found non-productive, it will be plugged and abandoned and the surface restored as per BLM specifications.

See attached "Drilling Program" summary and "Surface Use Program" for details.

I hereby certify that Petral Exploration LLC is responsible under the terms and conditions of the lease to conduct lease operations in conjunction with the application. Bond coverage pursuant to 43 CFR 3104 for lease activities is provided by BLM bond No. UT 1040.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.
SIGNED Anthony R. Mayer — Petral Exploration, LLC, Petroro Corp., Manager
TITLE Anthony R. Mayer, Sr. VP DATE June 13, 1996

(This space for Federal or State office use)

PERMIT NO. —
APPROVED BY — TITLE ~~Assistant Field Manager,~~ Resource Management DATE 7/16/96
CONDITIONS OF APPROVAL, IF ANY:

CONDITIONS OF APPROVAL ATTACHED
FLARING OR VENTING OF GAS IS SUBJECT TO NTL 4-A Dated 1/1/80

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [XX] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [XX] GAS WELL [ ] OTHER — SINGLE ZONE [X] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR
Petral Exploration, LLC

3. ADDRESS OF OPERATOR c/o McIlnay & Associates, INc.
2305 Oxford Lane, Casper, WY 82604

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface
2170' FNL & 2000' FWL (SE NW) Sec. 19-37S-25E
At proposed prod. zone
Same

5. LEASE DESIGNATION AND SERIAL NO.: UTU-043651
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA
7. UNIT AGREEMENT NAME: Knockando
8. FARM OR LEASE NAME: Knockando Unit
9. WELL NO.: #1
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 19-T37S-R25E, SLM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
Approximately 15 miles SE of Blanding, UT

12. COUNTY OR PARISH: San Juan
13. STATE: UT

10. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	Lease 2000' Unit 3050'	16. NO. OF ACRES IN LEASE: 1872.48	17. NO. OF ACRES ASSIGNED TO THIS WELL: 40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	10,650' Abd. Producer	19. PROPOSED DEPTH: 5493'	20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)
5050 GR, 5061' KB (est.)

22. APPROX. DATE WORK WILL START*

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
20"	16"	0.25 Wall	80'	To surface
12 1/4"	8 5/8"	24#/ft.,	1335'	To surface
7 7/8"	5 1/2"	15.5#/ft.	5493'	220 sks.

Request is made for all information to be held CONFIDENTIAL.

It is proposed to drill a well at the above location with the primary zone of interest the Upper Ismay Mound formation at 5209' TVD. If the well proves productive, 5 1/2" casing will be cemented in place and the well completed. If the well is found non-productive, it will be plugged and abandoned and the surface restored as per BLM specifications.

See attached "Drilling Program" summary and "Surface Use Program" for details.

I hereby certify that Petral Exploration LLC is responsible under the terms and conditions of the lease to conduct lease operations in conjunction with the application. Bond coverage purusant to 43 CFR 3104 for lease activities is provided by BLM bond No. UT 1040.

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24.
SIGNED Anthony R. Mayer — Petral Exploration, LLC, Petroro Corp., Manager
TITLE Anthony R. Mayer, Sr. VP DATE June 13, 1996

(This space for Federal or State office use)

PERMIT NO. 43-037-31777 APPROVAL DATE

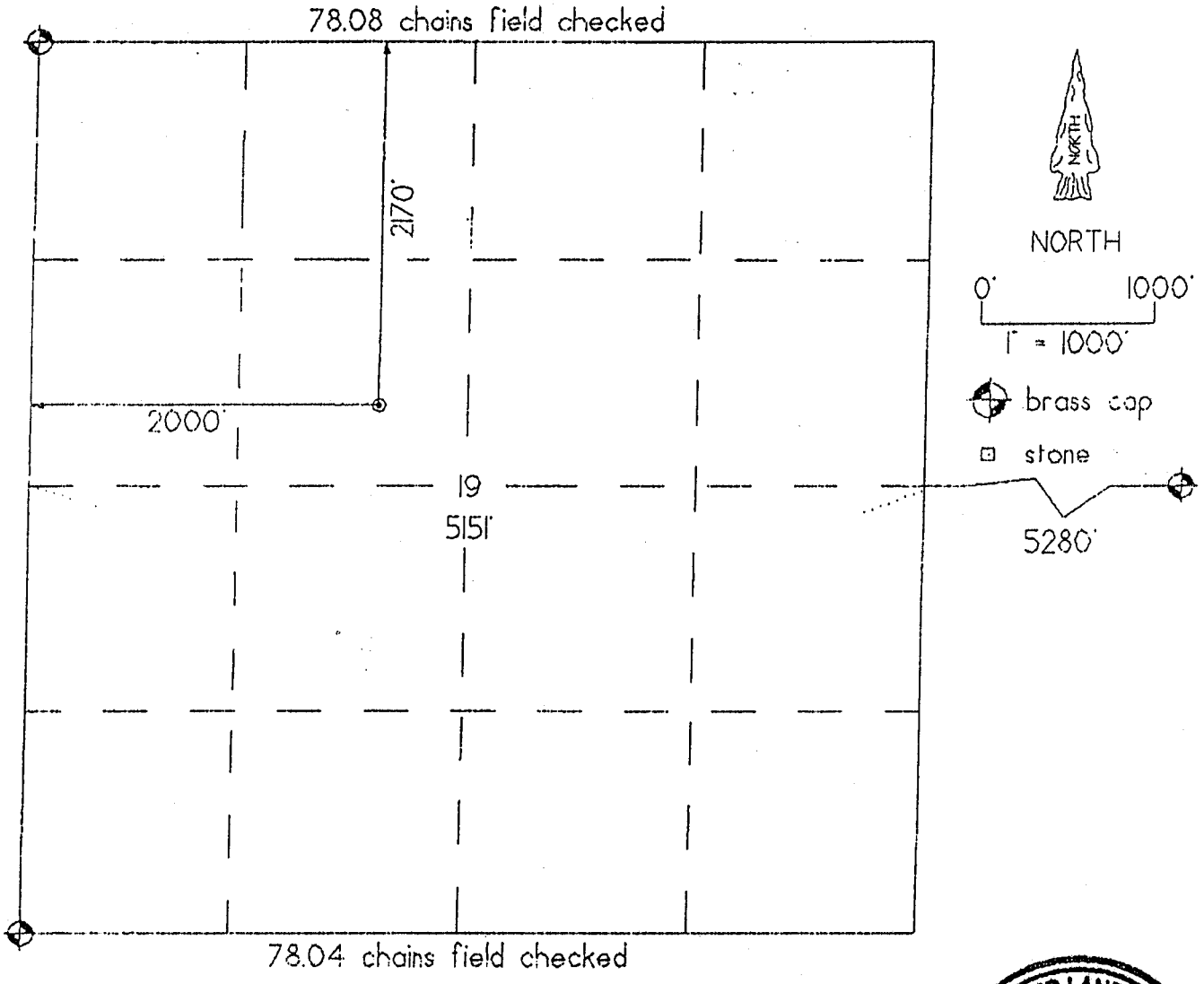
APPROVED BY J.P. Matthews TITLE Petroleum Engineer DATE 7/16/96

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Well Location Plat



REGISTERED LAND SURVEYOR
GERALD G. HUDDLESTON
No. 161297
STATE OF UTAH

Well Location Description

PETRAL EXPLORATION
1 Knockando-Federal
2170' FNL & 2000' FWL
Section 19, T.37 S., R.25 E., SLM
San Juan County, UT
5050' grd. el.
State plane coordinates from GPS survey:
332,334 North & 2,662,272 East
37°33'25.8438" lat & 109°12'54.5640" long (calculated)

24 May 1996

Gerald G. Huddleston, LS

The above is true and correct to my knowledge and belief.

HUDDLESTON LAND SURVEYING - BOX KK - CORTEZ, CO - (970) 565-3330

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 06/19/96

API NO. ASSIGNED: 43-037-31777

WELL NAME: KNOCKANDO #1
OPERATOR: PETRAL EXPLORATION LLC (N7700)

PROPOSED LOCATION:
SENW 19 - T37S - R25E
SURFACE: 2170-FNL-2000-FWL
BOTTOM: 2170-FNL-2000-FWL
SAN JUAN COUNTY
WILDCAT FIELD (001)

LEASE TYPE: FED
LEASE NUMBER: UTU -043651

PROPOSED PRODUCING FORMATION: AKAH

INSPECT LOCATION BY: / /		
TECH REVIEW	Initials	Date
Engineering		
Geology		
Surface		

RECEIVED AND/OR REVIEWED:

✓ Plat
✓ Bond: Federal [✓] State [] Fee []
(Number LT 1040)
N Potash (Y/N)
N Oil shale (Y/N)
✓ Water permit
(Number T19778)
✓ RDCC Review (Y/N)
(Date:)

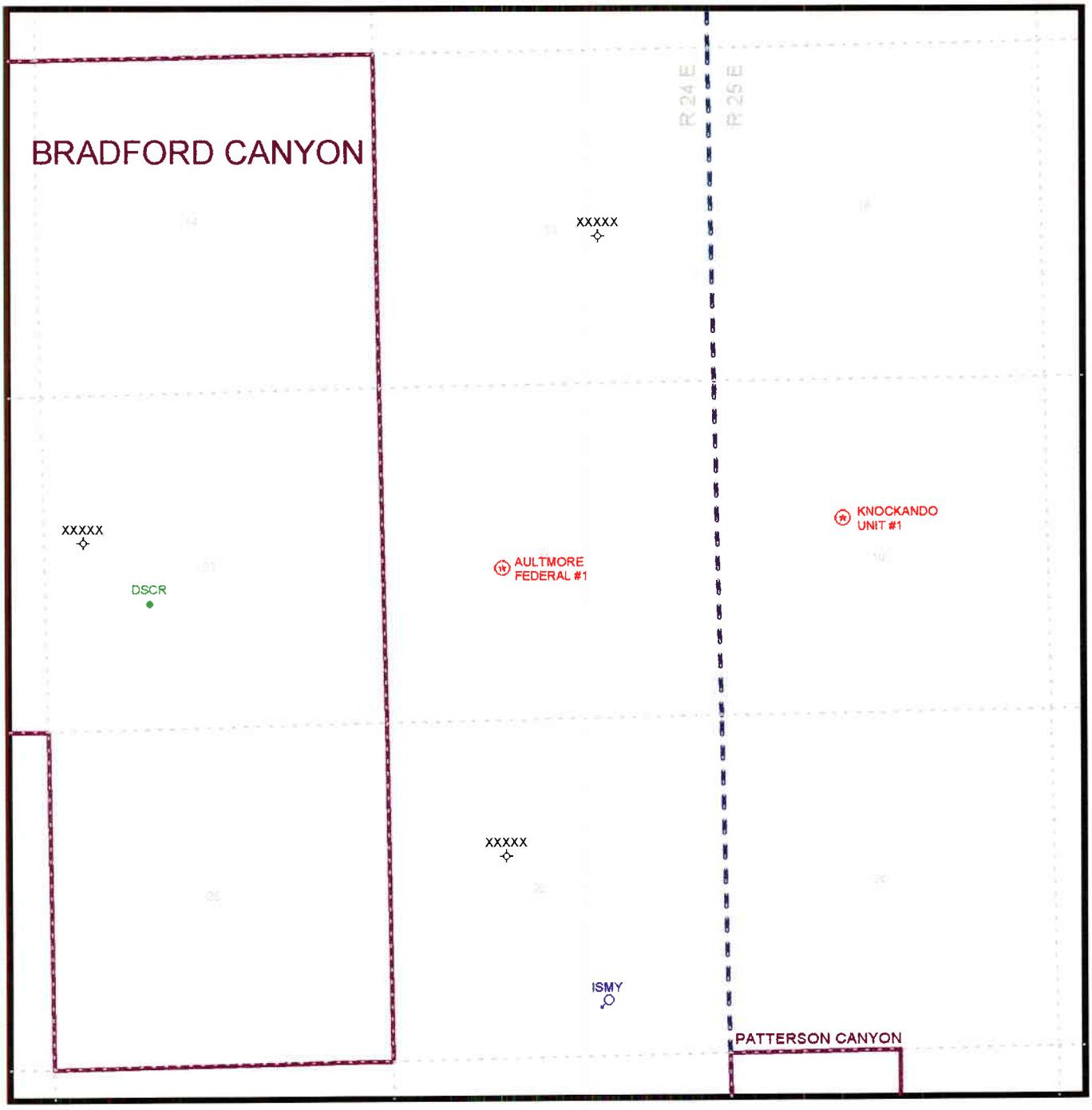
LOCATION AND SITING:

✓ R649-2-3. Unit: KNOCKANDO UNIT
___ R649-3-2. General.
___ R649-3-3. Exception.
___ Drilling Unit.
Board Cause no:
Date:

COMMENTS:

STIPULATIONS:

PETRAL EXPLORATION LLC
EXPLORATORY DRILLING
SEC. 24, T37S, R24E &
SEC. 19, T37S, R25E
SAN JUAN COUNTY, UAC R649-3-2 & R649-3-3



PREPARED:
DATE: 20-JUN-96

STATE OF UTAH, DIV OF OIL, GAS & MINERALS

Operator: PETRAL EXPLORATION LLC	Well Name: KNOCKANDO 1
Project ID: 43-037-31777	Location: SEC. 19 - T37S - R25E

Design Parameters:

Mud weight (8.90 ppg)	: 0.462	psi/ft
Shut in surface pressure	: 1351	psi
Internal gradient (burst)	: 0.035	psi/ft
Annular gradient (burst)	: 0.000	psi/ft

Tensile load is determined using air weight

Service rating is "Sweet"

Design Factors:

Collapse	: 1.125	
Burst	: 1.00	
8 Round	: 1.80	(J)
Buttress	: 1.60	(J)
Other	: 1.50	(J)
Body Yield	: 1.50	(B)

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	1,335	8.625	24.00	J-55	ST&C	1,335	7.972	

	Collapse Load (psi)	Collapse Strgth (psi)	Collapse S.F.	Burst Load (psi)	Min Int Yield Strgth (psi)	Burst S.F.	Tension Load (kips)	Tension Strgth (kips)	Tension S.F.
1	617	1370	2.220	1398	2950	2.11	32.04	244	7.62 J

Prepared by : MATTHEWS, Salt Lake City, Utah
Date : 07-16-1996
Remarks :

UPPER ISMAY WELL

Minimum segment length for the 1,335 foot well is 100 feet.

SICP is based on the ideal gas law, a gas gravity of 0.69, and a mean gas temperature of 112°F (Surface 74°F , BHT 93°F & temp. gradient 1.400°/100 ft.)

String type: Surface

Next string will set at 5,493 ft. with 12.00 ppg mud (pore pressure of 3,424 psi.) The frac gradient of 1.000 psi/ft at 1,400 feet results in an injection pressure of 1,400 psi Effective BHP (for burst) is 1,398 psi.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - collapse (with evacuated casing), 1.0 - (uniaxial) burst, 1.8 - API 8rd tension, 1.6 - buttress tension, 1.5 - body yield tension, and 1.6 - EUE 8rd tension. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser.
Costs for this design are based on a 1987 pricing model. (Version 1.07)

STATE OF UTAH, DIV OF OIL, GAS & MINERALS

Operator: PETRAL EXPLORATION LLC	Well Name: KNOCKANDO 1
Project ID: 43-037-31777	Location: SEC. 19 - T37S - R25E

Design Parameters:

Mud weight (12.00 ppg) : 0.623 psi/ft
Shut in surface pressure : 3231 psi
Internal gradient (burst) : 0.035 psi/ft
Annular gradient (burst) : 0.000 psi/ft
Tensile load is determined using air weight
Service rating is "Sweet"

Design Factors:

Collapse : 1.125
Burst : 1.00
8 Round : 1.80 (J)
Buttress : 1.60 (J)
Other : 1.50 (J)
Body Yield : 1.50 (B)

	Length (feet)	Size (in.)	Weight (lb/ft)	Grade	Joint	Depth (feet)	Drift (in.)	Cost
1	5,493	5.500	15.50	J-55	ST&C	5,493	4.825	

	Collapse Load (psi)	Collapse Strgth (psi)	Collapse S.F.	Burst Load (psi)	Min Int Yield Strgth (psi)	Burst S.F.	Tension Load (kips)	Tension Strgth (kips)	Tension S.F.
1	3424	4040	1.180	3424	4810	1.40	85.14	202	2.37 J

Prepared by : MATTHEWS, Salt Lake City, Utah
Date : 07-16-1996
Remarks :

UPPER ISMAY WELL
Minimum segment length for the 5,493 foot well is 100 feet.
SICP is based on the ideal gas law, a gas gravity of 0.69, and a mean gas temperature of 112°F (Surface 74°F , BHT 151°F & temp. gradient 1.400°/100 ft.)
String type: Production
The mud gradient and bottom hole pressures (for burst) are 0.623 psi/ft and 3,424 psi, respectively.

NOTE: The design factors used in this casing string design are as shown above. As a general guideline, Lone Star Steel recommends using minimum design factors of 1.125 - collapse (with evacuated casing), 1.0 - (uniaxial) burst, 1.8 - API 8rd tension, 1.6 - buttress tension, 1.5 - body yield tension, and 1.6 - EUE 8rd tension. Collapse strength under axial tension was calculated based on the Westcott, Dunlop and Kemler curve. Engineering responsibility for use of this design will be that of the purchaser.
Costs for this design are based on a 1987 pricing model. (Version 1.07)

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340
801-359-3940 (Fax)
801-538-5319 (TDD)

July 16, 1996

Petral Exploration, LLC
c/o McIlnay & Associates, Inc.
2305 Oxford Lane
Casper, Wyoming 82604

Re: Knockando Unit #1 Well, 2170' FNL, 2000' FWL, SE NW, Sec. 19, T. 37 S., R. 25 E., San Juan County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-037-31777.

Sincerely,

R. J. Firth
Associate Director

lwp
Enclosures
cc: San Juan County Assessor
Bureau of Land Management, Moab District Office

Operator: Petral Exploration, LLC

Well Name & Number: Knockando Unit #1

API Number: 43-037-31777

Lease: UTU-043651

Location: SE NW Sec. 19 T. 37 S. R. 25 E.

Conditions of Approval

1. General
   Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for Permit to Drill.

2. Notification Requirements
   Notify the Division within 24 hours following spudding the well or commencing drilling operations. Contact Jimmie Thompson at (801)538-5336.

   Notify the Division prior to commencing operations to plug and abandon the well. Contact Frank Matthews at (801)538-5334 or Mike Hebertson at (801)538-5333.

3. Reporting Requirements
   All required reports, forms and submittals shall be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: UTU-043651

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] OTHER — SINGLE ZONE [X] MULTIPLE ZONE [ ]

7. UNIT AGREEMENT NAME: Knockando

8. FARM OR LEASE NAME: Knockando Unit

2. NAME OF OPERATOR: Petral Exploration, LLC

9. WELL NO.: #1

3. ADDRESS OF OPERATOR: c/o McIlnay & Associates, INC.
2305 Oxford Lane, Casper, WY 82604

10. FIELD AND POOL, OR WILDCAT: Wildcat

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 2170' FNL & 2000' FWL (SE NW) Sec. 19-37S-25E
At proposed prod. zone: Same

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 19-T37S-R25E, SLM

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Lease 2000' / Unit 3050'	1872.48	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. 10,650' Producer	19. PROPOSED DEPTH	20. ROTARY OR CABLE TOOLS: Rotary

22. APPROX. DATE WORK WILL START*

RECEIVED
JUL 19 1996
DIV. OF OIL, GAS & MINING

RECEIVED
DIV. OF OIL, GAS & MINING

zone. If proposal is to drill or deepen dir.
preventer program, if any.

24.
SIGNED Anthony R. Mayer TITLE Petral Exploration, LLC, Petroro Corp., Manager DATE June 13, 1996
Anthony R. Mayer, Sr. VP

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY /s/ Brad D. Palmer TITLE Assistant Field Manager, Resource Management DATE JUL 16 1996

CONDITIONS OF APPROVAL, IF ANY:

CONDITIONS OF APPROVAL ATTACHED

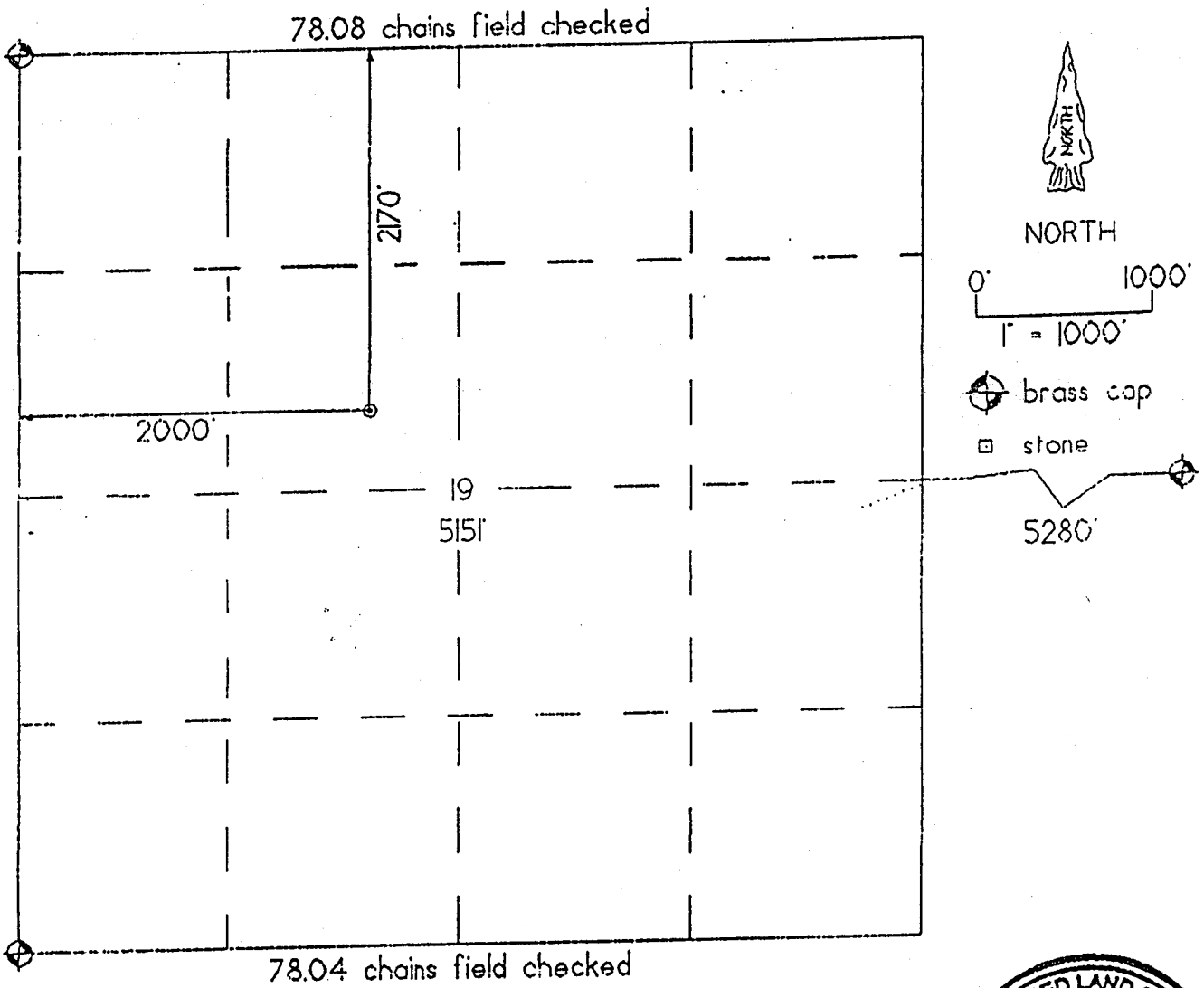
FLARING OR VENTING OF GAS IS SUBJECT TO NTL 4-A

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

BDGM

Well Location Plat



REGISTERED LAND SURVEYOR
GERALD G. HUDDLESTON
No. 161297
STATE OF UTAH

Well Location Description

PETRAL EXPLORATION
1 Knockando-Federal
2170' FNL & 2000' FWL
Section 19, T.37 S., R.25 E., SLM
San Juan County, UT
5050' grd. el.
State plane coordinates from GPS survey:
332,334 North & 2,662,272 East
37°33'25.8438" lat & 109°12'54.5640" long (calculated)

24 May 1996

Gerald G. Huddleston, LS

The above is true and correct to my knowledge and belief.

HUDDLESTON LAND SURVEYING - BOX KK - CORTEZ, CO - (970) 565-3330

Petral Exploration, LLC
Knockando #1
Lease U-043651
SE/NW, Section 19, T. 37 S., R. 25 E.
San Juan County, Utah

CONDITIONS OF APPROVAL

Approval of this application does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Be advised that Petral Exploration, LLC is considered to be the operator of the above well and is responsible under the terms and conditions of the lease for the operations conducted on the leased lands.

Bond coverage for this well is provided by UT-1040 (Principal - Petral Exploration, LLC) via surety consent as provided for in 43 CFR § 3104.2.

This office will hold the aforementioned operator and bond liable until the provisions of 43 CFR § 3106.7-2 continuing responsibility are met.

This permit will be valid for a period of one year from the date of approval. After permit termination, a new application must be filed for approval.

All lease operations will be conducted in full compliance with applicable regulations (43 CFR § 3100), Onshore Oil and Gas Orders, lease terms, notices to lessees, and the approved plan of operations. The operator is fully responsible for the actions of his subcontractors. A copy of these conditions and the approved plan will be made available to field representatives to insure compliance.

A. DRILLING PROGRAM

1. The proposed 3M BOP system is adequate. Installation, testing and operation of the system shall be in conformance with Onshore Oil and Gas Order No. 2.

2. Any fluid bearing zones or lost circulation zones encountered while drilling will be isolated behind casing and cement.

3. If a gas meter run is constructed, it will be located on lease within 500 feet of the wellhead. The gas flowline will be buried from the wellhead to the meter and will be buried downstream of the meter until it leaves the pad. Meter runs will be housed and/or fenced. The gas meter shall be calibrated prior to first sales and shall be calibrated quarterly thereafter. All gas production and measurement shall comply with the provisions of 43 CFR § 3162.7-3, Onshore Oil and Gas Order No. 5, and American Gas Association (AGA) Report No. 3.

B. SURFACE USE PLAN

The following stipulations have been developed to mitigate adverse environmental impacts which may result from the action permitted by the accompanying decision. The action permitted and its anticipated impacts are fully described in the environmental assessment or categorical exclusion referenced above.

1. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the San Juan Resource Area Manager. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the San Juan Resource Area Manager. An evaluation of the discovery will be made by the San Juan Resource Area Manager to determine appropriate action to prevent the loss of significant cultural or scientific values. The operator will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the operator.

2. BLM will complete a raptor/owl survey and clearance of the affected area surrounding the proposed drilling site prior to work initiation if the proposed well is drilled between February 1, and July 15. If the raptor/owl survey locates an active raptor/owl nest which would be affected by this proposal, no work would be allowed until nestlings have fledged.

3. Deer winter range restrictions from December 15, through April 30 are imposed for well location preparation and drilling operations.

4. All permanent above the ground production equipment will be painted Juniper Green.

5. The reserve pit shall remain free of hydrocarbons at all times. Any hydrocarbons entering the reserve pit will be removed promptly or the pit will be effectively sealed with netting material with a mesh of one inch or less.

6. Reclamation of the entire disturbed area will be accomplished by grading the area as near as near as practical back to the natural contour and spreading the top soil evenly as possible over the area. The entire disturbed area will be scarified with a 6 inch or less distance between ripped surfaces. The soil surface will be dry and loose prior to seeding and will be broadcast seeded between October 1, and February 28 with the following mixture of pure live seed:

Galleta	2 pounds/acre
Indian ricegrass	2 pounds/acre
Fourwing saltbush	2 pounds/acre
Sand dropseed	1 pound/acre
Wild sunflower	1 pound/acre
Cliffrose	1 pound/acre
Morman tea	1 pound/acre

C. REQUIRED APPROVALS, REPORTS AND NOTIFICATIONS

Required verbal notifications are summarized in Table 1, enclosed.

Building Location- Contact the BLM Petroleum Engineering Technician at the Monticello BLM Field Office at least 48 hours prior to commencing construction of location.

Spud- The spud date will be reported to BLM 24 hours prior to spudding. Written notification in the form of a Sundry Notice (Form 3160-5) will be submitted to the Moab BLM Field Office within 24 hours after spudding, regardless of whether spud was made with a dry hole digger or big rig.

Daily Drilling Reports- Daily drilling reports shall detail the progress and status of the well and shall be submitted to the Moab BLM Field Office on a weekly basis.

Monthly Reports of Operations- In accordance with Onshore Oil and Gas Order No. 1, this well shall be reported on Minerals Management Service (MMS) Form 3160, "Monthly Report of Operations," starting the month in which operations commence and continuing each month until the well is physically plugged and abandoned. This report will be filed directly with MMS.

Sundry Notices- There will be no deviation from the proposed drilling and/or workover program without prior approval. "Sundry Notices and Reports on Wells" (Form 3160-5) will be filed for approval for all changes of plans and other operations in accordance with 43 CFR § 3162.3-2. Safe drilling and operating practices must be observed.

Drilling Suspensions- Operations authorized by this permit shall not be suspended for more than 30 days without prior approval of the Moab BLM Field Office. All conditions of this approval shall be applicable during any operations conducted with a replacement rig.

Undesirable Events- Spills, blowouts, fires, leaks, accidents, or any other unusual occurrences shall be immediately reported to the BLM in accordance with requirements of NTL-3A.

Cultural Resources- If cultural resources are discovered during construction, work that might disturb the resources is to stop, and the BLM is to be notified.

First Production- Should the well be successfully completed for production, the Moab BLM Field Office will be notified when the well is placed in producing status. Such notification may be made by phone, but must be followed by a sundry notice or letter not later than five (5) business days following the date on which the well is placed into production.

A first production conference will be scheduled as soon as the productivity of the well is apparent. This conference should be coordinated through the Monticello BLM Field Office. The Monticello BLM Field Office shall be notified prior to the first sale.

Well Completion Report- Whether the well is completed as a dry hole or as a producer, "Well Completion and Recompletion Report and Log" (Form 3160-4) will be submitted to the Moab BLM Filed Office not later than thirty (30) days after completion of the well or after completion of operations being performed, in accordance with 43 CFR § 3162.4-1. Two copies of all logs, core descriptions, core analyses, well test data, geologic summaries, sample description, and all other surveys or data obtained and compiled during the drilling, workover, and/or

completion operations, will be filed with Form 3160-4. When requested, samples (cuttings and/or samples) will be submitted to the Moab BLM Field Office.

Venting/Flaring of Gas- Gas produced from this well may not be vented/flared beyond an initial, authorized test period of 30 days or 50 MMcf, whichever occurs first, without the prior, written approval of the BLM. Should gas be vented or flared without approval beyond the authorized test period, the well may be ordered shut-in until the gas can be captured or approval to continue the venting/flaring as uneconomic is granted. In such case, compensation to the lessor shall be required for that portion of the gas that is vented/flared without approval and which is determined to have been avoidably lost.

Produced Water- Produced waste water may be confined to an unlined pit for a period not to exceed 90 days after initial production. During the 90 day period, an application for approval of a permanent disposal method and location, along with the required water analysis, will be submitted to the Moab BLM Field Office for approval pursuant to Onshore Oil and Gas Order No. 7.

Off-Lease Measurement, Storage, Commingling- Prior approval must be obtained from the Moab BLM Field Office for off-lease measurement, off-lease storage and/or commingling (either down-hole or at the surface).

Plugging and Abandonment- If the well is completed as a dry hole, plugging instructions must be obtained from the Moab BLM Field Office prior to initiating plugging operations.

A "Subsequent Report of Abandonment" (Form 3160-5) shall be filed with the Moab BLM Field Office within thirty (30) days following completion of the well for abandonment. This report will indicate where plugs were placed and the current status of surface restoration. Upon completion of approved plugging, a regulation marker will be erected in accordance with 43 CFR § 3162.6. Final abandonment will not be approved until the surface reclamation work required by the approved APD or approved abandonment notice has been completed to the satisfaction of the BLM, or the appropriate surface managing agency.

TABLE 1. NOTIFICATIONS

Notify Jeff Brown of the Monticello BLM Field Office in Monticello, Utah, at (801) 587-2141, or at home (801) 587-2046 for the following:

2 days prior to commencement of dirt work, construction and reclamation;

1 day prior to spudding;

50 feet prior to reaching each casing setting depth;

3 hours prior to testing BOPE

If the person at the above number cannot be reached, notify the Moab BLM Field Office at (801) 259-6111. If unsuccessful, contact one of the people listed below.

Well abandonment operations require 24 hour advance notice and prior approval. In the case of newly drilled dry holes, verbal approval can be obtained by calling the Moab Field Office at (801) 259-6111. If approval is needed after work hours, you may contact the following:

Gary Torres, Petroleum Engineer	Office:	(801) 587-2141
	Home:	(801) 587-2705
Eric Jones, Petroleum Engineer	Office:	(801) 259-2117
	Home:	(801) 259-2214

DIVISION OF OIL, GAS AND MINING CONFIDENTIAL

SPUDDING INFORMATION

Name of Company: PETRAL EXPLORATION, LLC

Well Name: KNOCKANDO UNIT # 1

Api No. 43-037-31777

Section 19 Township 37S Range 25E County SAN JUAN

Drilling Contractor _____

Rig #: _____

SPUDDED:

Date: 7/22/96

Time: _____

How: _____

Drilling will commence: _____

Reported by: SUNDRY NOTICE

Telephone #: _____

Date: 7/29/96 Signed: FRM

From the Desk of

SHARON ORR

Lisha Cordova

Attached is the Entity Action Form
we spoke about on the phone today.

Please let me know if there is anything
additional you need.

Sharon

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

ENTITY ACTION FORM - FORM 6

OPERATOR Petral Exploration, LLC

ADDRESS Box 5083
Denver, CO 80217

OPERATOR ACCT. NO. N 7700

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION QQ	SC	TP	RG	COUNTY	SPUD DATE	EFFECTIVE DATE
A	99999	11954	43-037-31777	Knockando Unit #1	SE NW	19	37S	25E	San Juan	Conductor 7-22-96	

WELL 1 COMMENTS: Federal Unit - Knockando Unit
Well will be drilled as a "Tight Hole"
Entity added 7-29-96. Lec

WELL 2 COMMENTS:

WELL 3 COMMENTS:

WELL 4 COMMENTS:

WELL 5 COMMENTS:

ACTION CODES (See instructions on back of form)
- A - Establish new entity for new well (single well only)
- B - Add new well to existing entity (group or unit well)
- C - Re-assign well from one existing entity to another existing entity
- D - Re-assign well from one existing entity to a new entity
- E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

(3/89)

RECEIVED
JUL 26 1996
DIV. OF OIL, GAS & MINING

Signature McIlnay & Associates, Inc.
Petral Expl. Repr. 7-23-96
Title Date

Phone No. (307) 265-4351

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

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5. Lease Designation and Serial No.
UTU-043651

6. If Indian, Allottee or Tribe Name
NA

7. If Unit or CA, Agreement Designation
Knockando

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Knockando Unit

2. Name of Operator
Petral Exploration, LLC

9. API Well No.
43-037-31777

3. Address and Telephone No. c/o McIlnay & Associates, Inc.
2350 Oxford Lane, Casper, WY 82604

10. Field and Pool, or Exploratory Area
Wildcat

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2170' FNL & 2000' FWL (SE NW) Sec. 19-T37S-R25E

11. County or Parish, State
San Juan Co., UT

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other Set conductor	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Utilizing a dry hole digger, 70' (GL) of 16" conductor casing was set and cemented to surface w/5 yards ready mix cement July 22, 1996.

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JUL 29 1996
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Signed [signature] Title McIlnay & Associates, Inc. Consulting Engineers Date July 24, 1996

(This space for Federal or State office use)
Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

facsimile
TRANSMITTAL

to: State of Utah, Division of Oil, Gas & Mining
fax #: (801) 359-3940
re: Petral Exploration, LLC, Knockando Unit #1 & ~~Ardmore #1~~
date: August 2, 1996
pages: 4, including cover sheet.

Attached are the weekly progress reports on the above referenced wells.

If you need further information, please give us a call.

From the desk of...

Sharon Orr

McIlnay & Associates, Inc.
7305 Oxford Lane
Casper, WY 82604

307 265 4351
Fax: 307 473-1218

7-29-96

Filled 400 Bbl. tank with water, put 10 loads water in pit and set trash bin 7-27-96. Will move Four Corners rig on location 7-29-96 and spud.

7-30-96

Three loads of Four Corners rig #7 delivered to location. Remainder of rig will be moved to location today (7/30/96) and rigged-up. Anticipate spudding late 7/30/96 or early a.m. 7/31/96.

Utah State approval for Exception Location Application ok.

7-31-96 1 days from spud
Depth: 97' - made 15' in 1/2 Hrs.
Status: Waiting on mechanic to repair right angle drive
Hours:

1/2	Drilling
1/2	PU DC & Bit sub
17	Move in & RU
2	Drilling rat hole
1/4	Flowline repair
3 3/4	WO mechanic

Bit: 1A, 121/4", Reed, RRAP51, E70842, In 82', Made 15' in 1/2 Hrs.
BHA: 1-8" DC & 1 121/4 Bit
Pump #1 - 6"
Details: Rigged up. Drilled rat hole. Started mouse hole. Mouse hole digger broke down. Went to town for parts. Rigged up and drilled 12 1/4" hole while waiting on digger parts for mouse hole. Right angle drive went out on rig. Shut down. Waiting on mechanic @ 7 a.m. for repairs.
Costs: Cum. Cost. $ 31,217 Rem. AFE: $ 328,620

8-1-96 2 days from spud
Depth: 1341' - made 1244' in 15 1/2 Hrs.
Status: Drilling
Hours:

15	Drilling
1	Tripping
1	Surveying
2 1/4	Rig Repair
1/4	Rig Service
1 1/4	WO mechanic
2	Drilling mouse hole
1 1/4	Mix mud

Bit: 1A, 121/4", Reed, RR AP51, E70892, In 82', Made 1271" in 15 1/2 Hrs.
Survey: 314 - 3/4°, 610 - 3/4°, 959 - 1/4°
BHA: Bit-sub, 2-8" DC, 1-7 3/4" stab., 1-8" DC
WOB - 60,000#, RPM - 90, Pump -100 PSI
Pump #1 - 6" x 6", 102 SPM
Details: Rig repair to right angle drive. Drill mouse hole, run survey, drilling. Tight hole @ 1339'. Worked pipe and mixed gel. Sticking 40' off bottom. Free after mixing gel. Drilling ahead @ 6:00 a.m. Will set surface @ 1360'. 8 5/8" surface casing delivered for both Knockando and Aultmore. Monel collar and core bbl. on location.
Costs: Daily Cost: $ 29,590 Cum. Cost. $ 61,537 Rem. AFE: $ 299,030

8-2-96 3 days from spud
Depth: 1376' - made 35' in 1 1/2 Hrs. Cum. Drlg. Hrs. 18
Status: Nipple up
Hours:

1	1/2	Drilling
1	1/4	Tripping
	1/2	Surveying
1		Run casing
1	3/4	Cementing
2	1/2	Circulating
6		WOC
3	1/4	BOP
5		Cut off casing & weld a head
	1/4	Work tight hole
1		Lay down 8" DC

Bit: 1A, 12 1/4", Reed, AP51, E70892, In 70', out @ 1376' - made 1306' in 18 Hrs. Jets 14-14-15, B2-T2-In gauge, 72'/Hr.
Survey: 1364' - 1/2°,
Mud: Wt. 8.9, Vis. 45, WL 14
SLM: Board 1376.53, Talley 1376, Correction none
Details: Drilling, tripping - SLM. Circulating and waiting on Howco 3/4 hrs. Lay down DC, RU and run casing. WOC. Cut off and weld on head. Tested weld. Nipple up BOP's. Called State with BOP and surface update. BLM on location. Cement fell 10' below surface. Will gravel pack after BOP test.
Geo: Chinle

Surface Casing Detail

1	HOWCO Guide Shoe	1.50
1	Jt. 8 5/8", 24#/ft., USA, J55, 8Rd, ST&C new casing	44.30
1	HOWCO Insert Float Valve	0.0
30	Jts. 8 5/8", 24#/ft., USA, J55, 8Rd, ST&C new casing	1320.34
1	Landing Jt. 8 5/8", 24#/ft., J55, 8Rd, ST&C	14.00
	Total	1380.14'KB
	Above KB	- 4.00
	Casing Landed KBM ..	1376.14'KB

32 Jts. Delivered
31 Jts. Used
1 Jts. On location

Casing Accessories
1 Guide shoe. Insert float valve (top of shoe jt.).
Centralizers
1 centralizer middle of shoe jt. 2nd collar above shoe jt.
1 centralizer every 4th collar for 3
1 centralizer every 6th collar for 3
1 centralizer on 3rd collar from surface

Cementing Details
20 BFW ahead. Mixed 510 sks. Howco Lite with 2% CaCl, 1/4#/sk Flocele. Tailed with 150 sks. regular cement 2% CaCl, 1/4#/sk Flocele. Disp. with 85 BFW. Good cement returns.
Costs: Daily Cost: $ 24,074 Cum. Cost. $ 85,610 Rem. AFE: $ 274,956

Status Report

Aultmore #1

7-29-96
Started building road into location. Dirt contractor shut down for weekend, will resume on Monday. Access road will require blasting.

7-30-96
Building road into location. Having difficulty getting wide enough because of rock, may require blasting..

7-31-96
Building location and road.

8-1-96
Building road & location. Having difficulty with rock. Have not required blasting yet.

8-2-96
Building location and road. Road 75% complete and location 20% complete. Appears will require some blasting.

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facsimile
TRANSMITTAL

to: State of Utah, Division of Oil, Gas & Mining
fax #: (801) 359-3940
re: Petral Exploration, LLC, #1 Knockando Unit
SE NW Sec. 19-T37S-R25E, San Juan Co., UT
date: August 9, 1996
pages: 4, including cover sheet.

API NO. 43-037-31777

Progress reports for your information.

If you need any additional information, please do not hesitate to contact our office.

Sharon

From the desk of...

Sharon Orr

McIlnay & Associates, Inc.
2305 Oxford Lane
Casper, WY 82604

307 265 4351
Fax: 307 473-1218

with BOP and surface update. BLM on location. Cement fell 10' below surface. Will gravel pack after BOP test.

Geo: Chinle

Surface Casing Detail

1	HOWCO Guide Shoe	1.50
1	Jt. 8 5/8", 24#/ft., USA, J55, 8Rd, ST&C new casing	44.30
1	HOWCO Insert Float Valve	00.00
30	Jts. 8 5/8", 24#/ft., USA, J55, 8Rd, ST&C new casing	1320.34
1	Landing Jt. 8 5/8", 24#/ft., J55, 8Rd, ST&C	14.00
	Total	1380.14'KB
	Above KB	- 4.00
	Casing Landed KBM	1376.14'KB

32 Jts. Delivered
31 Jts. Used
1 Jt. On location + 2' cut off piece

Casing Accessories
1 Guide shoe. Insert float valve (top of shoe jt.).

Centralizers
1 centralizer middle of shoe jt.
1 centralizer 2nd collar above shoe jt.
1 centralizer every 4th collar for 3
1 centralizer every 6th collar for 3
1 centralizer on 3rd collar from surface

Cementing Details
20 BFW ahead. Mixed 510 sks. Howco Lite with 2% CaCl, 1/4#/sk Floccle. Tailed with 150 sks. regular cement 2% CaCl, 1/4#/sk Flocele. Displaced with 85 BFW. Good cement returns. Bumped plug w/500psi. Plug down @ 4 AM.

Costs: Daily Cost: $ 24,074 Cum. Cost. $ 85,610 Rem. AFE: $ 274,956

8-3-96 4 days from spud
Depth: 1990' - made 614' in 12 Hrs. Cum. Drlg. Hrs. 30
Status: Drilling
Hours:

12		Drilling
1		Tripping
1		Surveying
1	1/2	Nipple up
	1/4	Rig Service
7	1/4	BOP Test

Bit: 2, 8 3/4", Smith, F 2H, LB4054, In 1376', made 614' in 12 Hrs.
Jets 12-12-8, 51'/Hr.
Survey: 1549' - 3/4° True S 23 E, 1732' - 1/2° S58E, 1950' - 3/4° True S 68 E
Mud: Wt. 8.6, Vis. 28, Water, Calcium 180, Calcium 1300
WOB: 45,000#, 70 RPM, 1600 pump psi, 278 GPM, 157/245 AVDP/AVDC
Details: Nipple up, pressure test BOP w/Quadco. Tested kill valve choke line and manifold valve, blind & pipe rams and floor valves to 3000 psi. Tested annular to 2500 psi. Tested casing to 2000 psi for 30 min. Picked up monel and tripped in hole. Drilled plug and cement top @ 1315'. Drilled float 45'. Drilled to 1564' and ran monel single shot. Ran gel sweep prior to surveys.
Geo: Sand and shale

Costs: Daily Cost: $ 13,577 Cum. Cost. $ 99,187 Rem. AFE: $ 261,379

8-4-96 5 days from spud
Depth: 3085' - made 1095' in 22 1/4 Hrs. Cum. Drlg. Hrs. 52 1/4
Status: Drilling
Hours:

22	1/4	Drilling
1	3/4	Surveying

Bit: 2, 8 3/4", Smith, F 2H, LB4054, In 1376', made 1709' in 34 1/4 Hrs.
Jets 12-12-8, 49.8'/Hr.

Survey: 2142' - 3/4° True S88°E Obs. N80°E, 2559' - 3/4° True S53°E Obs. S65°E, 2601' - 3/4° True S88°E Obs. N80°E
Mud: Wt. 8.6, Vis. 28, Water, Calcium 180, Calcium 1300
WOB: 40,000#, 70 RPM, 1600 pump psi, 278 GPM, 157/245 AVDP/AVDC
Pump #1, 6 x 6, SPM 102
Details: 1" water flow @ 2578' - dead at 2900'. Mud logging trailer onlocation.
Geo: Sand, shale and coal

Costs: Daily Cost: $ 19,454 Cum. Cost. $ 118,641 Rem. AFE: $ 241,926

8-5-96 6 days from spud
Depth: 3925' - made 840' in 22 1/2 Hrs. Cum. Drlg. Hrs. 74 3/4
Status: Drilling
Hours: 22 1/2 Drilling
1/2 Surveying
1 Rig service
Bit: 2, 8 3/4", Smith, F 2H, LB4054, In 1376', made 2549' in 56 1/4 Hrs.
Jets 12-12-8, 49.8'/Hr.
Survey: 2918' - 1° True N75°E Obs. N63°E, 3235' - 1 1/4° True N77°E Obs. N65°E, 3626' - 1 1/4° True S84°E Obs. N84°E
Mud: Wt. 8.5, Vis. 28, Water, Calcium 240, Calcium 2200
WOB: 40,000#, 75 RPM, 1700 pump psi, 278 GPM, 157/245 AVDP/AVDC
Pump #1, 6 x 6, SPM 102
Details: Held BOP drill and BOP check. Geo./mud logger (Paul) on location. Roger had truck problems in Grand Junction.
Geo: Sand and shale.

Costs: Daily Cost: $ 15,437 Cum. Cost. $ 134,078 Rem. AFE: $ 226,489

8-6-96 7 days from spud
Depth: 4685' - made 760' in 20 1/4 Hrs. Cum. Drlg. Hrs. 95
Status: Drilling
Hours: 20 1/4 Drilling
1/4 Surveying
1/2 Rig Service
1 1/4 Wash & Ream
1 1/2 Trips
1/4 BOP
Bit: 2, 7 7/8", Smith, F 2H, LB4054, In 1376', made 3309' in 77 Hrs.
Jets 12-12-8, 42'/Hr.
Survey: 3899' - 3/4° True N42°E Obs. N30E, 4523' - 1 1/4° True N22°E Obs. N10°E,
Mud: Wt. 8.5, Vis. 28, Water, Calcium 280, Chlorides 5100
WOB: 40,000#, 75 RPM, 1600 pump psi, 278 GPM, 157/245 AVDP/AVDC
Pump #1, 6 x 6, SPM 102
Details: Drilling, rig service, BOP check, survey and ran gel sweeps. Tripped out looking for hole-found hole @ 1550'. Laid joint down and replaced. TIH and resumed drilling.
Geo: Honaker Trail Sample top @ 4084'
No shows. Background gas 2-6 units.
Shale, siltstone and sandstone.
Costs: Daily Cost: $ 15,101 Cum. Cost. $ 149,379 Rem. AFE: $ 211,188

8-7-96 8 days from spud
Depth: 5018' - made 333' in 15 3/4 Hrs. Cum. Drlg. Hrs. 110 3/4
Status: Drilling
Hours: 15 3/4 Drilling
1/4 Rig Service
1 Wash & Ream
6 Trips
1 Rig Repair
Bit: 3, 7 7/8", Smith, F 3H, LH3316, In 4806', made 112' in 11 Hrs., Jets 13-13-8, 10'/Hr
Survey: None
Mud: Wt. 8.7, Vis. 36, WL 16, Filler Cake 2 /32 PH 11.5, PV 6, YP 12, Gels 4/17, Calcium 180, Alk. Pf/Mf .6/1.4, Solids 2.25, Sand Tr., Chlorides 7100

BHA: Bit - 1 junk sub - 1 Bit sub, 1-monel, 20 - 6 1/4" DC, 5 jts. wt. pipe – 776.62'
WOB: 40,000#, 60 RPM, 1500 pump psi, 300 GPM, 179/297 AVDP/AVDC
Pump #1, 6 x 6, SPM 102
SLM: Board 4785.20', Talley 4775.30, Correction 10' up hole.
Details: Drilling, rig service, trip to pick up junk sub. Rig repair cat head clutch. BOP check. TIH and resumed drilling, mix mud - w/r 180' to btm.
Geo: No trip gas- shaker bypassed. No shows.
Costs: Daily Cost: $ 10692 Cum. Cost. $ 178,815 Rem. AFE: $ 200,496

8-8-96 9 days from spud
Depth: 5150' - made 132' in 7 1/2 Hrs. Cum. Drlg. Hrs. 118 1/4
Status: Trip in w/ core bbl.
Hours:

7 1/2	Drilling
1/4	Rig Service
1	Wash & Ream
4	Tripping
1 3/4	Circ.
1/4	Surveys
7 1/2	Kill Water Flow
1 1/2	Pick up core BBL

Bit: 3, 7 7/8", Smith, F3H, SN LH3316, In 4806', out @ 5160', made 350' in 18 1/2 Hrs.
Jets 13-13-8, 19'/Hr, T1-B1 - In gauge
4, 7 27/32", Baker Hughes, HRC 325, SN 190310, In @ 5156'
Survey: 1 1/4° @ 5026', True N32°E, obs- N20°E
Mud: Pit Check,Wt. 10.3, Vis. 47, WL 12, FC 3 /32 PH 10, PV 14, YP 18, Gels 8/21, Calcium 350, Chlorides 13,000, Alk-pf/mp .4/1.3, Solids 11, Sand Tr.,.
BHA: Bit, core bbl, jars, Xo-sub, 21- 6 1/4" DC, 5 jts. wt pipe.
WOB: 40,000#, 60 RPM, 1500 pump psi, 300 GPM, 179/297 AVDP/AVDC
Pump #1, 6 x 6, SPM 102
SLM: Board 5156.8', Talley 5156.30', Correction - None
Details: Drilling, rig service. Core Samples. Had a water flow @ 5130'. Mixed heavy mud from Knockdhu #1 into system. Mixed in 10.6#/gal mud. Coming out at 9.4 to 9.6 #/gal. Raised mud weight slowly to 10.3#/gal before flow killed. Pretreated mud with 12 sks. of Magnaflux lost circulation material. TOH for core Bbl. TIH w/ core Bbl. At 7:30 AM 8/8/96, on bottom with core bbl, preparing to core.
Geo: See attached geological report.
Costs: Daily Cost: $ 13,198 Cum. Cost. $ 174,098 Rem. AFE: $ 186,469

8-9-96 10 days from spud
Depth: 5219' - made 63' in 3 1/2 Hrs. Cum. Drlg. Hrs. 121 3/4
Status: Trip in w/DST tools. On bottom with test tools at report time.
Hours:

3 1/2	Drilling
3/4	Wash & Ream
10 3/4	Trips
3	Circulate
2	Pick up test tools
4	lay down core and evaluate

Bit: 4, 7 27/32", Baker Hughes, HRC 325, SN 190310, In @ 5156' - out @ 5219' - made 63' in 3 1/2 Hrs., 18'/Hr.
Mud: Wt. 10.5, Vis. 44, WL 10, FC 2 /32, PH 10, PV 17, YP 15, Gels 6/23, , Alk-Pf/Mf .4/1.2, Solids 12, Sand Tr., Calcium 490, Chlorides 18,200
BHA: DST tools
WOB: 14,000#, 90 RPM, 1150 pump psi,
Pump #1, 6 x 6, SPM 102
SLM: Board 5221.84', Talley 5221.30', Correction - None
Details: Cored from 5156 to 5219' - recovered 63'. Laid down core and tripped in with bit to condition hole for DST. TOH and made up test tools and tripped in hole with same.
Geo: See attached geological report.
Costs: Daily Cost: $ 10,406 Cum. Cost. $ 184,504 Rem. AFE: $ 176,063

CONFIDENTIAL

facsimile
TRANSMITTAL

to: State of Utah, Division of Oil, Gas & Mining
fax #: (801) 359-3940
re: Petral Exploration, LLC, #1 Knockando Unit 43-037-31777
SE NW Sec. 19-T37S-R25E, San Juan Co., UT
date: August 16, 1996
pages: 1 including cover sheet

Progress reports for your information.

If you need any additional information, please do not hesitate to contact our office.

Sharon

From the desk of...

Sharon Orr

McIlnay & Associates, Inc.
2305 Oxford Lane
Casper, WY 82601

307 265-4351
Fax: 307 473-1218

8-10-96 11 days from spud
Depth: 5219' - Cum. Drlg. Hrs. 121 3/4
Status: Trip out w/DST tools.
Hours: 23 Testing
1 Tripping
Mud: Wt. 10.5, Vis. 44, WL 10, FC 2 /32, PH 10, PV 17, YP 15, Gels 6/23, , Alk-Pf/Mf .11/1.2, Solids 12, Sand Tr., Calcium 490, Chlorides 18,200
BHA: DST tools, 19 DC and 5 Jts. wt. pipe
Pump #1, 6 x 6,
Details: Ran DST #1

DST #1 - Ismay 5156' - 5219'

IH	2866 psig	
IF	199 - 120 psig	60 min. Opened strong & died off to steady w/4" water
ISI	2120 psig	120 min.
FF	175 - 321 psig	300 min. Steady blow of 3" of water
FSI	2349 psig	900 min. Still bubbling after 5 Hrs. - no gas.
FH	2701 psig	
BHT	130° F	

Recovery: 1871' gas vapors - 558' mud & water
Top sample 26,000 ppm Chlorides,
Middle Sample 59,000 ppm Chlorides, 60,000 ppm nitrates
Bottom Sample 8500 ppm Chlorides

Sample Chamber: 1650 cc mud and water - 0.158 cu. ft. gas
Recovered water: 0.078 -m @ 68° F, 103,000 ppm Chlorides w/trace of nitrate.
Pit mud: 0.39 -m @ 68° F

8-11-96 12 days from spud
Depth: 5315' - made 96' in 13 Hrs. Cum. Drlg. Hrs. 134 3/4
Status: Drilling
Hours: 13 Drilling
1/4 Wash & ream
4 1/2 Tripping
2 1/4 Break Core and test tools down.
1/2 Rig Service
3 1/2 Kill water flow
Bit: 5, 7 7/8" (RR) Smith, F-3H, SN LH3316, In @ 5219' - (total) made 446' in 31 1/2 Hrs., Jets 15-15-15,
Mud: Wt. 10.9, Vis. 56, WL 8.8, FC 2 /32, PH 10.5, PV 23, YP 19, Gels 8/29, Alk-Pf/Mf .6/1.4, Solids 15, Sand Tr., Calcium 600, Chlorides 19,900
BHA: Bit, bit sub, 1 monel DC, 20 - 6 1/4" DC's, 5 Jts. Wt. Pipe = 776.62'
WOB: 40,000#, RPM 60, Pump PSI 1500, GPM 300, AVDP/AVDC 179/297
Pump #1, 6 x 6, SPM 102
Details: Pulled DST #1, laid down tools and laid down core bbl. Tripped in hole w/bit, circulated and conditioned hole. Well flowing after DST. Back on bottom circulating 10.5# mud in hole. At start of circulating, cut to 9.2 - 9.3#, Vis 30. Raised mud to 10.5# and still flowing at rate of 1 BPM. Raised Wt. to 10.7+#. Pumped mud to kill water flow. Continued to increase volume & vis. in pits to keep mud up. Resumed drilling.

8-12-96 13 days from spud
Depth: 5446' - made 111' in 12 1/2 Hrs. Cum. Drlg. Hrs. 147 1/4
Status: Logging
Hours: 12 1/2 Drilling
4 Tripping
3 Circulating
3/4 Survey
1/2 Rig Service
3 1/4 Logging

8-12-96 - Continued

Bit: 5, 7 7/8" (RR) Smith, F-3H, SN LH3316, In @ 5219' - out @ 5446' - (total) made 557' in 57 Hrs., Jets 15-15-15, T2-B2-In Gauge, 9'/Hr.
Survey: Misrun
Mud: Wt. 10.9, Vis. 58, WL 10, FC 2 /32, PH 10.5, PV 22, YP 21, Gels 8/31, Alk-Pf/Mf .5/1.3, Solids 12, Sand 1/4, Calcium 600, Chlorides 21,000
BHA: Bit, bit sub, 1 monel DC, 20 - 6 1/4" DC's, 5 Jts. Wt. Pipe = 776.62'
WOB: 40,000#, RPM 60, Pump PSI 1350,
Pump #1, 6 x 6, SPM 102
SLM: Board - 5446.50' Talley - 5446.22' - No correction
Details: Logging - washed out @ 2100' - Appears to be water sand.
Geo: See attached report

8-13-96 14 days from spud
Depth: 5447' - made 0' Cum. Drlg. Hrs. 147 1/4
Status: Tripping in hole to plug
Hours:
7 1/2 Tripping
2 3/4 Circulating
2 Lay down DC
8 3/4 Log
3 Wait on Logger. Repaired logging truck generator.
Mud: Wt. 57, Vis. 109, WL 9/5, FC 2 /32, PH 10.5, PV 22, YP 21, Gels 8/31, Alk-Pf/Mf .5/1.3, Solids 12, Sand 1/4, Calcium 600, Chlorides 21,000
BHA: Open ended
WOB: Pump #1, 6 x 6
Details: Waited on loggers to make repairs to finish logging. Tripped in hole and circulated. TOH with logs and laid down logging tools. Laid down DC's and preparing to plug.

Log Tops:

Formation	Log Top
Upper Ismay	5078'
Upper Ismay massive anhydrite	5118'
Upper Ismay mound	5142'
Hovenweep Shale	5252'
Lower Ismay	5252'
Lower Ismay anhydrite	5270'
Lower Ismay carbonate	5294'
Gothic Shale	5303'
Upper Desert Creek	5325'
Upper Desert Creek anhydrite	5338'
Lower Desert Creek	5363'
Lower Desert Creek anhydrite	5374'
Lower Desert Creek mound	5382'
Chimney Rock Shale	5398'
Akah	5419'
Total Depth	5446'

8-14-96 15 days from spud
Depth: 5447' - made 0' Cum. Drlg. Hrs. 147 1/4
Status: Nipple down
Hours:
1 Tripping
3 1/2 Circulating & WOO
3 1/2 Nipple down
16 Plugging
Mud: Cut back from 10.9 to 10.2#.

Details: TIH to P&A, circulate and wait on orders. Rig up Halliburton and plugged as follows:
150 sks 5446 - 5058' - Waited 4 Hrs. and tagged plug. Took 5000# weight okay.
172 sks 2100 - 1880' - Mud returns while setting plug were water cut. Waited 4 hours and tagged plug. Took 5000# weight okay. Well flowing small stream. BLM (Jeff Brown) said okay to increase surface pipe plug volume to shut off water flow.
75 sks 1422 - 1198' - After plug set water flow stopped.
20 sks 60 - 0' - Will install dry hole marker.

First plug 50/50 poz-mix w/2% CaCl. All other plugs Class "B" cement w/2% CaCl. Plugs displaced with 10.2#/gal mud. Plugging approved and witnessed by Jeff Brown, BLM.

Pumped 400 Blbs., 10.2#/gal mud w/preservatives added to storage tank. Will use on next well.
Core hhl monel collar and directional equipment sent to Cooper.
34 Jts. 8 5/8" surface casing transferred to Triad Construction yard.
Quadco PVT and related equipment released.
Released one water storage tank.
Currently nippling down and cleaning mud tanks.

8-15-96

Nippled down. Cleaned mud tanks. Rig released @ 11 AM 8-14-96. Installed dry hole marker. Fenced 4th side of reserve pit and flagged same. Sent 8 5/8" wellhead into Well Head Service.

CONFIDENTIAL

FORM 7

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

RECEIVED
AUG 30 1996
DIV. OF OIL, GAS & MINING

REPORT OF WATER ENCOUNTERED DURING DRILLING

1. Well name and number: Knockando Unit #1

   API number: 43-037-31777

2. Well Location: QQ SE NW Section 19 Township 37S Range 25E County San Juan

3. Well operator: Petral Exploration, LLC
   c/o McIlnay & Associates, Inc.
   Address: 2305 Oxford Lane
   Casper, WY 82604 Phone: (307) 265-4351

4. Drilling contractor: Four Corners Drilling Co.
   Address: Box 1067
   Farmington, NM 87499 Phone: (505) 326-3371

5. Water encountered (attach additional pages as needed):

DEPTH		VOLUME (FLOW RATE OR HEAD)	QUALITY (FRESH OR SALTY)
FROM	TO		
44'	45'	Water level below surface	- no sample caught.
2578'	2900'	1" flow	Mud cut - no sample.

6. Formation tops:

Upper Isamy 5078'	U. Ismay Anhyd. 5118'	U. Ismay Mound 5142'
Hovenweep Shale 5219'	Lower Ismay 5252'	L. Ismay Anhyd. 5270'
Lower Ismay Carb. 5294'	Gothic Shale 5303'	Upper Desert Crk. 5325'
U. Desert Crk. Anh. 5338'	Lower Desert Crk. 5363'	L. Desert Crk. Anhy. 5374'
L. Desert Crk Mnd. 5382'	Chimney Rock Sh. 5398'	Akah 5419'

If an analysis has been made of the water encountered, please attach a copy of the report to this form.

I hereby certify that this report is true and complete to the best of my knowledge. Date: August 15, 1996

Name & Signature: Edward W. McIlnay McIlnay & Associates, Inc. Consulting Engineers Title: Reporting Agent

CONFIDENTIAL

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: UTU-043651
6. If Indian, Allottee or Tribe Name: NA
7. If Unit or CA, Agreement Designation: Knockando
8. Well Name and No.: Knockando Unit
9. API Well No.: 43-037-31777
10. Field and Pool, or Exploratory Area: Wildcat
11. County or Parish, State: San Juan Co., UT

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Petral Exploration, LLC
3. Address and Telephone No.: c/o McIlnay & Associates, Inc. 2350 Oxford Lane, Casper, WY 82604
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2170' FNL & 2000' FWL (SE NW) Sec. 19-T37S-R25E

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☒ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well was spudded with a 12 1/4 " hole 7-30-96 and drilled to TD with a 7 7/8" hole. 8 5/8" surface casing was set @ 1376' and cemented in place with 660 sks cement. No zones of commercial quantities of oil and/or gas were encountered. Decision was made and verbal permission granted to P&A by Jeff Brown, BLM as follows:

160 sks. 5446 - 4878' - 200' above Ismay
92 sks. 2100 - 1900' - across water zone
50 sks. 1400 - 1300' - in & out of surface
35 sks. 50 - 0' - surface

RECEIVED
AUG 30 1996
DIV OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Signed _____ Title McIlnay & Associates, Inc. Consulting Engineers Date August 14, 1996

(This space for Federal or State office use)
Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

CONFIDENT

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.
UTU-043651

6. If Indian, Allottee or Tribe Name
NA

7. If Unit or CA, Agreement Designation
Knockando

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Knockando Unit

2. Name of Operator
Petral Exploration, LLC

9. API Well No.
43-037-31777

3. Address and Telephone No. c/o McIlnay & Associates, Inc.
2350 Oxford Lane, Casper, WY 82604

10. Field and Pool, or Exploratory Area
Wildcat

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2170' FNL & 2000' FWL (SE NW) Sec. 19-T37S-R25E

11. County or Parish, State
San Juan Co., UT

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☒ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well was plugged and abandoned as follows 8-13-96:
150 sks. - 5446 - 5058' - Waited 4 Hrs. and tagged plug (took 5000# okay).
172 sks. - 2100 - 1880' - Mud returns while setting plug were water cut. Waited 4 Hrs. & tagged plug (took 5000# okay).
75 sks. - 1422 - 1198' - In & out of Surface Casing
20 sks. - 60 - 0' - At surface

Installed dry hole marker. Filled all holes and fenced 4th side of reserve pit. Location will be restored and reseeded.

RECEIVED
AUG 30 1996
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Signed _____ Title McIlnay & Associates, Inc. Consulting Engineers Date August 15, 1996

(This space for Federal or State office use)
Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Form 3160-4
(November 1983)
(formerly 9-330)

CONFIDENTIAL

SUBMIT IN DUPLICATE*
(See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: UTU-043651

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NA

7. UNIT AGREEMENT NAME: Knockando

8. FARM OR LEASE NAME: Knockando

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 19-T37S-R25E

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other P & A

2. NAME OF OPERATOR: Petral Exploration, LLC

3. ADDRESS OF OPERATOR: c/o McIlnay & Associates, Inc.
2305 Oxford Lane, Casper, WY 82604

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 2170' FNL & 2000' FWL (SE NW) Sec. 19-T37S-R25E
At top prod. interval reported below: Same
At total depth: Same

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
43-037-31777	7-16-96	San Juan	UT

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
7-30-96	8-11-96	8-13-96 P & A	5062' KB, 5050' GL	-------

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5446' DRLR	Surface	NA	→	0 - 5446'	0

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: None

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: LITHOLOGY PRESENTATION 8-21-96
GR-BHCS; SHDT; GR-BHCS; GR-FDC-CNL; GR-SP-Array Induction;

27. WAS WELL CORED: Yes

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
16"	0.25 Wall Thick	70' GL	20"	5 Yds. ready mix	---
8 5/8"	24#/ft.,	1376' KB	12 1/4"	660 sks cement	---

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (*Interval, size and number*)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
		P & A

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)

RECEIVED
AUG 30 1996
DIV. OF OIL, GAS & MINING

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)

35. LIST OF ATTACHMENTS

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Donald W. McIlnay TITLE McIlnay & Associates, Inc. Consulting Engineers DATE 8-15-96

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
			Core #1 5156 - 5219' - 63'
			DST #1 Ismay 5156 - 5219' IH 2866 psig IF 199-129 psig - 60 min. Opened strong & died to steady w/4" water ISI 2120 psig - 120 min. FF 175-321 psig - 300 min. - Steady blow of 3" water FSI 2349 psig - 900min. No gas, bubbling FHP 2701 psig after 5 Hrs. BHT - 130°F Rec: 1871' gas vapors - 558' mud & water Sample Chamber: 1650 cc mud & water 0.158 cu. ft. gas
			DST report to be submitted

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Log Tops		
Upper Ismay	5078'	
U. Ismay Anhyd.	5118'	
U. Ismay Mound	5142'	
Hovenweep Sh	5219'	
Lower Ismay	5252'	
L. Ismay Anhyd.	5270'	
L. Ismay Carb.	5294'	
Gothic Shale	5303'	
Upper Desert Crk.	5325'	
" " Anhyd.	5338'	
Lower Desert Crk.	5363'	
" " Anhyd.	5374'	
" " Mound	5382'	
Chimney Rock Sh	5398'	
Akah	5419'	

FOUR CORNERS DRILLING
P. O. BOX 1067
5651 U.S. HWY. 64
FARMINGTON, NEW MEXICO 87499

TELEPHONE: (505) 326-3371
FAX: (505) 326-3370

CONFIDENTIAL

August 19, 1996

Petral Exploration
Drilling Department
PO Box 5083
Denver, CO 80217

RE: Deviation report on the #1 Knockando Unit,
Section 19, Township 37 S, Range 25 E
San Juan County, Utah

Gentlemen:

Below is the deviation report for your #1 Knockando Unit

314'	¾°
610'	¾°
959'	¼°
1346'	½°
1545'	¾°
1732'	½°
1950'	¾°
2142'	¾°
2359'	1°
2601'	¾°
2918'	1°
3235'	1¼°
3626'	1¼°
3999'	¾°
4523'	1¼°
5026'	1¼°

Sincerely,

FOUR CORNERS DRILLING COMPANY

Gary Miller
Drilling Superintendent

GM/tdd

Acknowledgement

State of New Mexico)
) s.s.
County of San Juan)

The foregoing instrument was acknowledged before me this 19th day of August, 1996, by Gary Miller.

Notary Public

My Commission Expires : 8/26/98
(seal)

facsimile
TRANSMITTAL

to: State of Utah, Division of Oil, Gas & Mining
fax #: (801) 359-3940
re: Petral Exploration, LLC, #1 Knockando Unit
SE NW Sec. 19-T37S-R25E, San Juan Co., UT
date: October 18, 1996
pages: 4, including cover sheet.

Progress reports for your information.

If you need any additional information, please do not hesitate to contact our office.

Sharon

From the desk of...

Sharon Orr

McIlnay & Associates, Inc.
2305 Oxford Lane
Casper, WY 87604

307 265-4351
Fax: 307 473-1718

10-12-96 **Day 5**
Depth: 3000'- made 520' in 13 Hrs. - Cum. Drlg. Hrs. 58 1/2
Status: Drilling
Hours:
13		Drilling
1	1/2	Drilling cement & shoe
2		Tripping
1		Nipple up BOP
4		BOP Test
2		W.O. Testers
	1/2	Surveys

BIT: 3, 12 1/4", Reed HP51, SN 657569, In @ 1013' - out @ 2510' - made 497' in 27 1/2 Hrs.
Jets 13/14/15, 53.5'/Hr, T2-B2-54.4
4, 7 7/8", Sm F2H, SN LB1149, In @ 2510' - made 490' In 13 Hrs.
Jets 12-12-Blank, 37.7'/Hr.
Survey: 1/2 ° @ 2727' N37E
Mud: Fresh Water - Wt. 8.4, Vis 28
BHA: Bit, bit sub, monel DC, 20-6 1/4" DC, 5 Jts. Wt. pipe = 771.41'
WOB 40,000#, RPM 70, Pump PSI 1550, GPM 294, AVDP/AVDC 165/291
Pump #1 - 6 x 6, 100 SPM Pump #2 - 6 x 6,
Details: Finished NU BOP. WO testers, truck trouble. Pressure tested BOP as follows:
Blind rams, pipe rams, choke manifold, kill line valves, floor valve and kelly valve tested to 3000 psig for 10 min.; annular tested to 1500 psig for 10 min and casing tested to 1000 psig for 30 min. All okay. Test witnessed by Jeff Brown, BLM.
Picked up monel DC and TIH. Drilled cement and shoe, tagged stringers of cement at 2422'.
Drilling w/no problems using fresh water w/polymer sweeps.
Geo: Cutler

10-13-96 **Day 6**
Depth: 3788' made 758' in 23 1/4 Hrs. - Cum. Drlg. Hrs. 81 3/4
Status: Drilling
Hours:
23	1/4	Drilling
	1/2	Surveys
	1/4	Rig Service

BIT: 4, 7 7/8", Sm F2H, SN LB1149, In @ 2510' - made 1248' In 36 1/4 Hrs.
Jet s 12-12-Blank, 34.4'/Hr.
Survey: See attached
Mud: Fresh Water - Wt. 8.4, Vis 28
BHA: Bit, bit sub, monel DC, 20-6 1/4" DC, 5 Jts. Wt. pipe = 771.41'
WOB 40,000#, RPM 70, Pump PSI 1750, GPM 294, AVDP/AVDC 165/291
Pump #1 - 6 x 6, 102 SPM Pump #2 - 6 x 6,
Details: Rigged up PVT & flow sensor. Rigged up mud loggers.
Geo: Cutler

10-14-96 **Day 7**
Depth: 4610' made 822' in 22 1/2 Hrs. - Cum. Drlg. Hrs. 104 1/4
Status: Drilling
Hours:
22	1/2	Drilling
1		Surveys
	1/2	Rig Service

BIT: 4, 7 7/8", Sm F2H, SN LB1149, In @ 2510' - made 2100' In 58 3/4 Hrs.
Jets 12-12-Blank, 35.7'/Hr.
Survey: See attached
Mud: Fresh Water - Wt. 8.4, Vis 27
BHA: Bit, bit sub, monel DC, 20-6 1/4" DC, 5 Jts. Wt. pipe = 771.41'
WOB 40,000#, RPM 75, Pump PSI 1800, GPM 300, AVDP/AVDC 165/291
Pump #1 - 6 x 6, 102 SPM Pump #2 - 6 x 6,
Geo: Honaker Trail - See Decollement Report

10-15-96 **Day 8**
Depth: 5010' made 400' in 17 Hrs. - Cum. Drlg. Hrs. 121 1/4
Status: Drilling
Hours: 17 Drilling
5 3/4 Tripping
1/2 Surveys
3/4 Rig Service
BIT: 4, 7 7/8", Sm F2H, SN LB1149, In @ 2510' - made 2500' In 75 3/4 Hrs.
Jets 12-12-Blank, 33'/Hr.
Survey: See attached
Mud: Wt. 9.0, Vis. 40, WL 14, FC 2/32, pH 9.5, Wtr. 95.5, PV 6, YP 9, Gels 3/11, Alk. (Pf/Mf) .1/.3, Solids 4.5, Sand Nil, Calcium 260, Chlorides 4900
BHA: Bit, bit sub, monel DC, 20-6 1/4" DC, 5 Jts. Wt. pipe = 771.41'
WOB 40,000#, RPM 75, Pump PSI 1850, GPM 300, AVDP/AVDC 165/291
Pump #1 - 6 x 6, 100 SPM Pump #2 - 6 x 6,
Geo: Drilled to 4900', started to mud up. TOH @ 4945' to look for hole in DP. Hole was 34 stands down. Drilled to 4993'. TOH for hole in DP. Hole was 36 stands down. Drilling ahead.

10-16-96 Day 9
Depth: 5146' made 136' in 9 1/4 Hrs. - Cum. Drlg. Hrs. 130 1/2
Status: TIH for Core #1
Hours: 9 1/4 Drilling
1 Wash & ream
1 Circulating
9 1/2 Tripping
1/2 Surveys
3/4 Rig Service
1/2 Mix pill
1 1/2 Pick up core barrel
BIT: 4, 7 7/8", STC F2H, SN LB1149, In @ 2510' - out @ 5146' - made 2636' In 85 Hrs.
Jets 12-12-Blank, 31'/Hr., T8-B4-1/4 out
5, 7 7/8", STC F2H, RR, In @ 5146' out @ 5146' - wash & ream, Jets 13-13-B
6, 7 27/32", Baker ARC-325-FC, SN 1900034, in @ 5146' - Jets TFA .70
Survey: Misrun
Mud: Wt. 9.1, Vis. 40, WL 11, FC 2/32, pH 8.5, PV 7, YP 8, Gels 3/9, Alk. (Pf/Mf) .05/.2, Solids 6, Sand 0, Calcium 300, Chlorides 5900
BHA: Core barrel, x-over, 20-6 1/4" DC
WOB 40,000#, RPM 75, Pump PSI 1850, GPM 300, AVDP/AVDC 165/291
Pump #1 - 6 x 6, 102 SPM Pump #2 - 6 x 6,
SLM: Board - 5146' Talley 5148.79' - no correction
Geo: Drilled to 5146', circulated samples. Drilling break from 5143 - 5146', broke from 4 min/ft., to 1.5 min/ft. TOH with bit. Many of the inserts were missing & 1/4" out of gauge. Picked up RR bit and junk sub and TIH. Washed and reamed 65' to bottom and reamed 20' of out of gauge hole. TOH. Picked up core barrel. TIH for Core #1.

10-17-96 Day 10
Depth: 5206' made 60' coring Cum. Drlg. Hrs. 130 1/2
Status: Waiting on daylight to open DST tool
Hours: 8 1/2 Tripping
5 1/4 Circulating
1 3/4 Coring
3/4 Pump core ball
6 1/4 Wait on daylight
1 1/2 Lay down core
BIT: 6, 7 27/32", Baker ARC-325-FC, SN 1900034, in 5146' - out 5206' - Jets TFA .70 34.3'/Hr.
Mud: Wt. 10.1, Vis. 40, WL 12, FC 2/32, pH 8.5, PV 14, YP 10, Gels 3/15, Alk. (Pf/Mf) .1/.25, Solids 11, Sand 0, Calcium 580, Chlorides 10,200
BHA: Test tools
WOB 15,000#, RPM 90, Pump PSI 650, GPM 285, AVDP/AVDC 157/276
Pump #1 - 6 x 6, 95 SPM Pump #2 - 6 x 6,

Details: Finished TIW core barrel. Coring. Core #1 5146 - 5206' KB. Detected water flow while coring. Circulated and built mud weight to 10.0 to 10.1 ppg. Well is dead. TOH w/Core #1. Chained out. Cored 60' and recovered 59 1/2'. See Geological report. The core smelled of oil and gas and was bleeding oil in several places. Boxed core and sent to Precision Lab in Denver via Steve Leeds. Stood the core barrel in the derrick. Picked up test tools for DST #1 5146' - 5206' KB. TIH to the bottom of the surface casing. Waited on daylight to finish TIH. TIH slowly for DST #1. Waited for daylight to open DST tool.

10-18-96 Day 11
Depth: 5246' made 0' Cum. Drlg. Hrs. 132 1/4
Status: Waiting to pull DST #1. Shut in until light.
Hours: 24 Testing
Mud: Wt. 10.2, Vis. 52, WL 8, FC 2/32, pH 10, , PV 14, YP 18, Gels 4/22, Alk. (Pf/Mf) .2/.3, Wtr. 90, Solids 10, Sand 0, Calcium 350, Chlorides 12,000, Nitrate 110
BHA: Test tools
WOB 15,000#, RPM 90, Pump PSI 650, GPM 285, AVDP/AVDC 157/276
Pump #1 - 6 x 6, 95 SPM Pump #2 - 6 x 6,
Details: Finished TIH with test tools. DST #1, 5146 - 5206' KB. Opened tool w/blow to bottom of bucket in 1 min. IF 15 min. ISI 30 min. Blew manifold down. FF opened w/strong blow and gas to surface. Built to 22.5 psig w/1/8" choke in 90 min. Decreased to 19.6 psig in 240 min. Closed tool after 240 min. FSI 18 hours. Waiting for daylight at report time. Released packers and pulled 2 stds of pipe. Dropped the bar and opened the circulating sub. Reverse circulated 24 Bbls. of oil and gas cut mud to the test tank. Saw no free oil or free water in the sample.

PETRAL EXPLORATION, LLC

#1 KNOCKANDO UNIT

SE/NW SEC.19,T37S,~~R26E~~ R25E
SAN JUAN CO., UTAH

43 037 31777

GEOLOGICAL REPORT

ON

#1 KNOCKANDO UNIT
SE/NW SEC.19.T37S,R25E

FOR

PETRAL EXPLORATION, LLC

TABLE OF CONTENTS

JULY/AUGUST, 1996 ROGER D. CHARBONNEAU, B.Sc.
WELLSITE GEOLOGIST
DECOLLEMENT CONSULTING INC.

WELL DATA SUMMARY

WELL NAME	#1 KNOCKANDO UNIT
OPERATOR	PETRAL EXPLORATION,LLC
SURFACE LOCATION	SE/NW Sec.19,T37S,R25E
BOTTOM HOLE LOCTION	AS ABOVE
WELL CLASSIFICATION	WILDCAT
DRILLING CONTRACTOR	FOUR CORNERS #7
WELL LICENCE NUMBER	UTU-043651
AFE NUMBER	#1 KNOCKANDO UNIT
ELEVATIONS - GROUND LEVEL	5050
- KELLY BUSHING	5062
SPUD DATE	7-31-96
T.D. DATE	7-12-96
RIG RELEASE DATE	7-13-96
SURFACE CASING	1368' of 8 5/8"
INTERMEDIATE CASING	Nil
HOLE SIZE	7 7/8"
SAMPLE INTERVAL	4000-5446'
GAS DETECTION INTERVAL	1335-2709

WELL DATA SUMMARY

OPEN HOLE LOGS	GR-S P-Induction: Lithodensity-Nuetron-Microlog
	GR-BHCS
	Strat-Hi Res Dip Meter
DRILL STEM TESTS	#1 Upper Ismay 5165-5219.5
CORES NIL	#1 Upper Ismay 5157-5219.5
MUD TYPE	LSND
WELL STATUS	Dry Hole

FORMATION TOPS

Kelly Bushing (ft) 5062'

FORMATION	PROGNOSIS	SAMPLE TOP	E-LOG TOP	SUBSEA LOG
	(ft)	(ft)	(ft)	(ft)
Honaker Trail	4075	4084	4073	989.0
La Sal	4833	4824	4871	191.0
Upper Ismay	5152	5130	5078	-16.0
U. Ismay Anhy	5179		5118	-56.0
U. Ismay Carbonate	5209	5180	5142	-80.0
Hovenweep	5279	5224	5219	-157.0
Lower Ismay	5312	5226	5252	-190.0
L. Ismay Anhy	5329	5274	5270	-208.0
L. Ismay Carbonate	5355	5296	5294	-232.0
Gothic	5363	5303	5303	-241.0
Upper Desert Creek	5387	5325	5325	-263.0
U.D.C. Anhy	5400	5338	5338	-276.0
Lower Desert Creek	5413	5363	5363	-301.0
L.D.C. Anhy	5423	5374	5374	-312.0
L.D. C. Mound	5430	5389	5382	-320.0
Chimney Rock	5447	5398	5398	-336.0
Akah	5468	5419	5419	-357.0
TD	5493		5446	

DEVIATION SURVEYS

DEPTH (ft)	SURVEY (degrees)
314	3/4
610	3/4
959	1/4
1549	3/4
1732	1/2
1950	3/4
2142	3/4
2359	1
2601	3/4
2918	1
3235	1 1/4
3626	1 1/4
3989	3/4
4523	1 1/4
5026	1 1/4

BIT RECORD

WELL NAME: #1 KNOCKANDO UNIT
LOCATION: SE/NW Sec.19,T37S,R25E
SURFACE CASING: 1368' of 8 5/8"
SPUD DATE: 7-31-96
T.D. DATE: 8-12-96

BIT #	1	2	3	4	5	5
SIZE (mm)	12 1/4	7 7/8	7 7/8	7 27/32	7 7/8	222
MAKE	Reed	Smith	Smith	Baker	RR #4	S.T.
TYPE	HP-51AJ	F-2H	F-3H	ARC-325		F-35
SERIAL #	E70872	LB4054	LH3316	1900310		LH1291
JETS	2x14	2x12	2x13	open		2x10.3
	1x15	1 blank	1 blank			1x9.5
OUT AT	1376	4806	Inc	5219	5446	2570
FOOTAGE	1306	3430	350	62	446	146
HOURS	18	72 1/2	18 3/4	3 1/2	37 1/2	51 3/4
ACC. HRS.	18	72 1/2	1011/4	104 3/4	142	324 1/4
WT.	60	40	40	12-14	40	16
RPM	90	75	60	90	60	70
PP	1000	1600	1500	1150	1400	8500
MUD WT	Water	Water	8.7	10.5	10.9	1220
VIS	Water	Water	35	43	54	45
VER. DEV.	1/2	1 1/4	1 1/4	1 1/4	1 1/4	1
COND.	TBG	T B G	T B G	T B G	T B G	T B G
REMARKS						

DRILL STEM TEST REPORT

Well Name and Location:	#1 KNOCKANDO UNIT
Test Number and Interval:	#1 5165-5219.5
Date:	8-10-96
Formation:	Upper Ismay
Test Type:	Bottom Hole Conventional
Hole Size:	7 7/8"
Testing Company:	Baker

Mud Properties

Mud Weight:	10.9	Viscosity:	56
pH	10.5	Water Loss:	8.8
Water Cushion	Nil		

Times and Pressures

Time and Date Tool Opened: 06:48 8-10-96

	Time (min)	Pressure (psi)
I.H.		2866
PREFLOW	60	120
I.S.I.	120	321
F.F.	240	2349
F.S.I.	640	2701
F.H.		

Bottom Hole Temperature (degrees F): 130

Recovery and Description

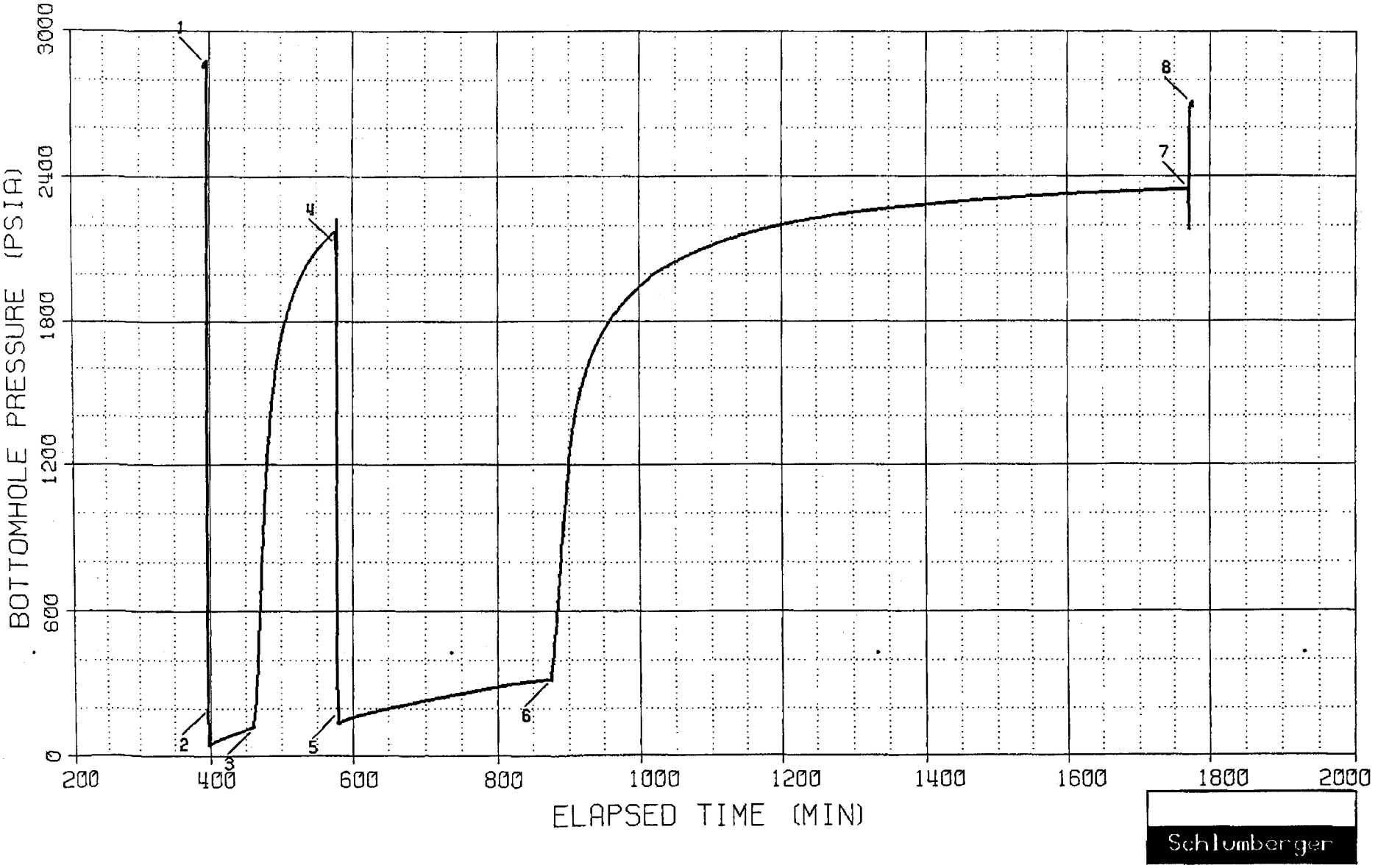
Preflow Description:	Tool opened w/3" blow, inc. to 9" in 28 min., dec. to 4" blow in 50 min.
Valve Open Description:	Start 1" blow, dec. to 4" blow in 14 min, dec to 2" in 60 min., inc to 3" blow through out.
Fluid Recovery:	186' mud & water,1871' of Gas in pipe.
Sampler:	.158 cu. ft. Gas, 1650 cc Water Rwo .078 @ 68F
Salinity:	.262 @ 68F Chlorides 26,000

BOTTOMHOLE PRESSURE LOG

FIELD REPORT NO. 142679
INSTRUMENT NO. HPR-C1390
DEPTH : 5140 FT
CAPACITY : 20000 PSI
PORT OPENING : INSIDE

COMPANY : PETRAL EXPLORATION
WELL : KNOCKANDO #1

Electronic Pressure Data



CORE REPORT

PETRAL EXPLORATION, LLC
#1 Knockando Unit
SE/NW Sec. 19,T37S,R25E
San Juan, Utah

Core #1 5157-5119.5 Cut 63.5 Recovered 63.5

5157-5169 **LIMESTONE** medium to dark gray brown, some tan, light to medium gray brown,argillaceous, abundant styolites, moderately abundant small thin shell fragments,brachiopods and crinoids becoming smaller downward, crinoids extremely stunted by 5169, very fine to microcrystalline, dense, hard, tight, massive, **occasional 4-6% intercrystalline porosity, blue white cut fluorescence, yellow gold residual ring cut fluorescence.**

5169-5176 **LIMESTONE** gray, light to medium gray brown, very argillaceous, some banding (limestone & shale), anhydrite blebs, dolomitic @ base, thin 1" streaks crinoid & brachiopod hash (small), very fine to microcrystalline, hard, tight, **4-6% intercrystalline porosity, blue white cut fluorescence, yellow gold residual ring cut.**

5176-5180 **DOLOMITE** light to medium gray brown, light gray, abundant anhydrite blebs, bubbling gas, 1 foot very fine microcrystalline porosity, styolites, mottled, sucrosic texture, occasional pin point & micropore porosity, show a/a.

5180-5187 **LIMESTONE** blue gray with gray brown mottled dolomite infill, light gray brown, brecciated appearance, trace scattered anhydrite blebs, very fine to fine crystalline, grainstone texture inpart, shell fragments, **6-8% intercrystalline porosity, blue white cut fluorescence, yellow gold residual ring cut.**

5187-5189.5 **DOLOMITE** medium to dark gray brown, limy, argillaceous, anhydrite blebs, earthy, lithographic, very fine to microcrystalline, **4-6% intercrystalline porosity, yellow gold residual ring cut.**

5189.5-5192 **LIMESTONE** light to medium gray brown, abundant 1/2" anhydrite blebs, styolitic, massive, brachiopod & crinoid fragments, **occasional pin point & micropore porosity, show a/a.**

5192-5193 **LIMESTONE** medium to dark gray brown, very small anhydrite blebs, **as above.**

5193-5195	LIMESTONE light gray brown, styolitic, small crinoids, very fine to microcrystalline, **weak show.**
5195-5199	LIMESTONE medium to dark gray brown, abundant anhydrite blebs, abundant brachs (small-1/2"), alternating light to darker color, **strong hydrocarbon odor, blue white cut fluorescence, heavy thick yellow gold residual ring.**
5199-5203	LIMESTONE medium to dark gray brown, abundant high amplitude styolites (1/4-1/2"), fossil hash (brachs & crinoids), microcrystalline, hard, dense, **tight, blue white cut fluorescence, yellow gold residual ring cut.**
5203-5207	DOLOMITE light to medium gray color banded, abundant 1/4" amplitude styolites, pyrobitumen in styolites, scattered small brachs & crinoids, scattered small anhydrite blebs, very fine to microcrystalline, **show a/a.**
5207-5219.5	DOLOMITE light gray to light gray brown, limy, scattered medium anhydrite blebs, trace small amplitude styolites, mottled, massive, very fine to microcrystalline, dense, lithographic, argillaceous, **trace pin point porosity, blue white cut fluorescence, yellow gold residual ring cut.**

DAILY DRILLING SUMMARY

Date	Depth	Progress	Hours Drlg.	Mud Mass	Visc.	W.L.	pH	Activity
7-31-96	937	867	11 1/4	Water				Spud, Drill Surface
8-1-96	1376	509	6 3/4	Water				Drill,Set Surface
8-2-96	1625	299	6 3/4	Water				Pres. Test, Drill
8-3-96	2800	299	6 3/4	Water				Drilling
8-4-96	3669	869	23 1/2	Water				Drilling
8-5-96	4502	871	23 1/2	Water				Drilling
8-6-96	4806	304	11	8.6	31	12.0	11.0	Drill, Trip for hole in pipe
8-7-96	5156	350	13 1/4	10.5	54	12.0	9.0	Drill, Kill water flow
8-8-96	5219	62	3 1/4	10.5	43	8.0	10.0	Cutting Core #1
8-9-96	5219	Nil						DST #1
8-10-96	5264	45	7 1/4	11.1	60	9.2	10.5	DST #!, Drill
8-11-96	5446	182	17 3/4	10.8	58	10.0	10.5	Drill, Cirr. for Logs
8-12-96	5446	Nil						Logging

LOGGING REPORT

Depth (Driller's):	5446	Date:	8-12-96
Depth (Strap)	5446	Logging Company:	Schlumberger
Depth (Logger's):	5446	Logging Engineer:	Sam M. Williams
Surface Casing (Driller's)	1368' of 8 5/8	Truck No:	3120
Intermediate Casing (Driller's)		Hole Size:	7 7/8"

Mud Details

Mud Type:	LSND	Weight:	10.9
pH:	10.5	Viscosity:	56
Water loss:	8.8	Salinity:	33,000

Operations Summary

Hole conditions prior to logging:	Excellent
Circulation time after T.D.	3 Hours
Number of Wiper Trips:	1
Description of Wiper Trips:	No Fill
Hours Logging:	9 3/4

Logging Sequence

Logs	Time Spent (hours)	Remarks
GR-SP-Induction	3	Stacked Set
litho-Density-Nutron-Microlog		Stacked Set-Platform Express
GR-BHCS	4 3/4	
Strat-Hi Res Dip Meter	2	
Number of Runs in Hole:	3	Failed: 1

Further Remarks

Power Supply Failed; Dip Meter Failed

QFT
DATA

DEPTH	QFT	DEPTH	QFT	DEPTH	QFT
5159	1349	5204	1172	5320	728
5160	1513	5206.8	1497	5325	553
5162	1201	5208	1206	5330	793
5163	1521	5209	952	5335	628
5164	1351	5210.3	485	5340	525
5166.2	1135	5213	1234	5345	503
5167.5	1110	5215.5	197	5350	421
5169.5	1200	5216.5	1114	5355	479
5170	1408	5218.3	1131	5360	539
5173.2	1525	5219.5	1109	5365	278
5174	1411	5225	1121	5370	325
5175	1155	5230	978	5375	210
5178	179	5235	1275	5380	195
5179.8	1025	5240	1571	5385	255
5181.2	286	5245	1475	5390	375
5184.8	1025	5250	1395	5395	450
5186	436	5255	1501	5400	489
5187	1275	5260	1028	5405	850
5188.4	1743	5265	1070	5410	1625
5189.3	1534	5270	1125	5415	1421
5190.6	1238	5275	1092	5420	1582
5191.7	1300	5280	1127	5425	1270
5193	1592	5285	485	5430	1425
5195	1024	5290	521	1435	1375
5196.4	1823	5300	325		
5198.6	2200	5305	275		
5202	1408	5315	652		

FORMATION EVALUATION

PETRAL EXPLORATION, LLC
#1 KNOCKANDO UNIT

Decollement Consulting Inc. rigged up 3:30 a.m. August 5,1996. The main objective at Knockando was the Upper Ismay Formation. Sample coverage commenced at 4000' and continued to total depth. The wellsite coverage included two man Mud Logging, QFT, QGM, and Mole Sample Washer. The Upper Ismay was Cored and DST'd. The Logging suit also included a Dip Meter.

UPPER ISMAY CARBONATE 5143ft (SS-80)

The Upper Ismay was a series of banded Limestones and Dolomites. The rock was light to medium gray brown, very fine to microcrystalline, argillaceous, styolitic, abundant scattered anhydrite blebs, abundant shell fragments, crinoids, and streaks of small Brachiopod hash. The Core reviled a deep water low energy environment that had good porosity but low associated permeability. The DST recovered minor amounts of Gas in the drill pipe but no Gas to surface. There was no oil recovery in the drill pipe or sampler. The samples had good QFT and cut fluorescence indicating that the rock was oil wet.

CONCLUSION: The Upper Ismay is Oil Wet at #1 Knockando but lacks the effective reservoir need to make an economic well.

LITHOGRAPHIC DESCRIPTIONS

#1 KNOCKANDO UNIT
SE/NW SEC. 19,T37S,R25E

4000 - 4025 ft	SHALE red brown, gray to green, waxy, silty, fissile, platy, limy, occasional anhydrite laminations.
4025 - 4050 ft	SHALE red brown, gray to green, waxy, silty, fissile, platy, limy, occasional anhydrite laminations.
4050 - 4073 ft	SHALE red brown, gray to green, waxy, silty, fissile, platy, limy, occasional anhydrite laminations.

Honaker Trail 4073

4073 - 4084 ft	SHALE red brown, earthy, silty, blocky, fissile, platy, limy, firm, sandy.
4084 - 4090 ft	SHALE red, red brown, mottled, silty, slightly calcareous, anhydrite laminations, occasional limestone laminations, light gray, earthy, lithographic.
4090 - 4126 ft	SHALE red brown, earthy, silty, blocky, fissile, platy, limy, firm, sandy, as above, poor samples 98% LCM.
4126 - 4139 ft	LIMESTONE light gray, mottled, red, lithographic, earthy, very fine to microcrystalline, soft to firm.
4139 - 4150 ft	SHALE variable colored, red brown, red, orange, brown, green, waxy, silty, sandy, soft to firm, light brown & white laminations, chalky limestone.
4150 - 4190 ft	SHALE red brown, orange, silty, sandy, earthy, slightly calcareous, soft to firm, occasional green, waxy, limestone laminations, gray, mottled.
4190 - 4220 ft	SHALE red to brown, orange, red, brown, silty, sandy, earthy, slightly calcareous, soft to firm, occasionally green, waxy, limestone laminations.

4220 - 4280 ft	SHALE red brown, dolomitic, limy, crystalline texture, sucrosic texture, lithographic, silty, sandy, earthy, slightly calcareous, grades to argillaceous limestone.
4280 - 4322 ft	SHALE red brown, dolomitic, limy, crystalline texture, sucrosic texture, lithographic, silty, sandy, earthy, slightly calcareous, grades to argillaceous limestone, occasionally green, mottled, brown.
4322 - 4347 ft	SANDSTONE white, light red, light green, very fine to fine grained, sub angular, fair to well sorted, predominantly unconsolidated, trace clay cement & matrix, no show.
4347 - 4388 ft	SHALE red brown, dolomitic, limy, crystalline texture, sucrosic texture, lithographic, silty, sandy, earthy, slightly calcareous, grades to argillaceous limestone, occasionally green, mottled, brown.
4388 - 4406 ft	LIMESTONE light gray brown, very fine to fine crystalline, green, mottled, brown.
4424 - 4440 ft	SHALE light gray, gray green, white, trace red, chalky, dolomitic, limy, lithographic, earthy, limestone laminations, very fine to microcrystalline, mottled, brown.
4440 - 4470 ft	SANDSTONE light red, gray, very fine to fine grained, sub angular, well sorted, predominantly unconsolidated, clay matrix & cement, no show.
4470 - 4490 ft	SHALE red brown, brown, green, dolomitic, limy, crystalline texture, sucrosic texture, micaceous, silty, sandy, slightly calcareous, grades to argillaceous limestone.
4490 - 4540 ft	SHALE red brown, brown, green, dolomitic, limy, crystalline texture, sucrosic texture, micaceous, silty, sandy, slightly calcareous, grades to argillaceous limestone.
4540 - 4590 ft	SHALE red brown, brown, dolomitic, occasionally green, limy, silty, sandy, earthy, mottled with anhydrite, slightly calcareous.
4590 - 4610 ft	SHALE red brown, brown, dolomitic, occasionally green, limy, silty, sandy, earthy, mottled with anhydrite, slightly calcareous.

4610 - 4640 ft	SHALE red brown, red, dolomitic, occasionally green, limy, silty, sandy, earthy, mottled red brown, red, dolomitic, occasionally green, limy, silty, sandy, earthy, mottled with anhydrite, slightly calcareous.
4720 - 4750 ft	SHALE light gray, gray green, white, trace red, chalky, dolomitic, limy, lithographic, earthy, limestone laminations, very fine to microcrystalline, mottled, brown.
4750 - 4800 ft	LIMESTONE red brown, brown, mottled, very fine to microcrystalline, lithographic, earthy.
4800 - 4824 ft	SHALE red brown, red, dolomitic, occasionally green, limy, silty, sandy, earthy, mottled white with anhydrite, slightly calcareous.
4824 - 4871 ft	LIMESTONE light to medium gray, very fine to microcrystalline, dense, silty, argillaceous, dolomitic, lithographic, white, light gray, chalky inpart, anhydrite lamination, mudstone to wackestone.
La Sal 4871	
4871 - 4873 ft	SHALE medium to dark gray, black, petroliferous, carbonaceous, platy, blocky fissile.
4873 - 4900 ft	LIMESTONE light to medium gray, very fine to microcrystalline, dense, silty, argillaceous, dolomitic, lithographic, white, light gray, chalky inpart, anhydrite laminations, mudstone to wackestone.
4900 - 4960 ft	SHALE medium to dark gray, limy, dolomite, earthy, soft to firm, marly, grades to lithographic limestone.
4960 - 5000 ft	LIMESTONE light to medium gray, very fine to microcrystalline, dense silty, argillaceous, dolomitic, lithographic, white, light gray, chalky inpart, anhydrite laminations, mudstone to wackestone.
5000 - 5040 ft	SHALE medium to dark gray, earthy, dolomitic, limy, very fine to microcrystalline, lithographic, dense.
5056 - 5078 ft	SHALE medium to dark gray, earthy, dolomitic, limy, very fine to microcrystalline, soft to firm, marly, grades to lithographic argillaceous limestone.

Upper Ismay 5078

5078 - 5083 ft	ANHYDRITE white, sucrosic, chalky, crystalline, soft to firm.
5083 - 5088 ft	SHALE medium to dark gray, black, earthy, dolomitic, limy, firm, petroliferous, sooty, **milky cut fluorescence, hydrocarbon odor.**
5088 - 5095 ft	ANHYDRITE white, crystalline, soft, chalky.
5097 - 5099 ft	LIMESTONE medium to dark gray, mottled well black laminations, very fine to microcrystalline, dense, silty, argillaceous, dolomitic, lithographic, white, light gray, chalky & anhydrite inpart, mudstone to wackestone.
5099 - 5104 ft	SHALE medium to dark gray, black, earthy, dolomitic, limy, firm, petroliferous, sooty, **milky cut fluorescence, hydrocarbon odor.**
5104 - 5118 ft	LIMESTONE medium to dark gray, mottled well black laminations, very fine to microcrystalline, dense, silty, argillaceous, dolomitic, lithographic, white, light gray, chalky & anhydrite inpart, mudstone to wackestone.

Upper Ismay Anhydrite 5118

5118 - 5142 ft	ANHYDRITE white, sucrosic, chalky, crystalline, soft to firm.
5142 - 5157 ft	LIMESTONE medium to dark grey brown, tan, argillaceous, shell debris, brachiopods, crinoidal, mottled well black laminations, very fine to microcrystalline, dense, dolomitic, lithographic, white, light gray, chalky & anhydritic inpart, mudstone to wackestone.
5157 - 5176 ft	LIMESTONE medium to dark gray brown, tan, argillaceous, stylolitic, shell debris, brachiopods & crinoids, very fine to microcrystalline, dense hard, tight, massive, **occasionally 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**
5176 - 5180 ft	DOLOMITE light to medium gray brown, light gray, abundant anhydrite blebs, argillaceous, stylolitic, very fine to microcrystalline, dense hard, tight, massive, bleeding gas, sucrosic texture, **occasional pin point & micropore porosity, occasionally 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**

Upper Ismay Mound 5180

5180 - 5187 ft	LIMESTONE blue gray with gray brown mottled dolomite, light gray brown, brecciated appearance, argillaceous, trace scattered anhydrite blebs, shell debris, brachs & crinoids, very fine to fine crystalline, occasionally grainstone texture, dense, hard, tight, massive, **occasionally 6 to 8% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**
5187 - 5190 ft	DOLOMITE medium to dark gray brown, as above.
5190 - 5203 ft	LIMESTONE medium to dark gray brown, tan, abundant with 2" anhydrite blebs, argillaceous, abundant high amplitude styloites (1/ 4 to 1/2"), shell debris, brachs & crinoids, very fine to microcrystalline, dense, hard, tight, massive, **occasionally 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**
5203 - 5207 ft	DOLOMITE medium to dark gray brown, color banded, pyrobitumen in stylolites, scattered small brachs & crinoids, anhydrite blebs, very fine to microcrystalline, as above.
5207 - 5220 ft	DOLOMITE light to medium gray brown, light gray, limy, abundant anhydrite blebs, argillaceous, mottled, lithographic, small amplitude stylolites, very fine to fine crystalline, **show as above.**

Hovenweep 5220

5220 - 5252 ft	SHALE medium to dark gray, petroliferous, sooty, **milky cut fluorescence, hydrocarbon odor.**

Lower Ismay 5252

5252 - 5270 ft	LIMESTONE medium to dark gray brown, tan, argillaceous, stylolitic, shell debris, brachs & crinoids, very fine to microcrystalline, dense, hard, tight, massive, **occasional 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ringl cut fluorescence**
5270 - 5294 ft	ANHYDRITE white, sucrosic, chalky, crystalline, soft to firm.

Lower Ismay Carbonate 5294

5294 - 5303 ft — **LIMESTONE** medium to dark gray brown, tan, argillaceous, stylolitic, shell debris, brachs & crinoids, very fine to microcrystalline, dense hard, tight, massive, **occasionally 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**

Gothic 5303

5303 - 5325 ft — **SHALE** medium to dark gray, black, earthy, dolomitic, limy, firm, petroliferous, sooty, **milky cut fluorescence, hydrocarbon odor.**

Upper Desert Creek 5325

5325 - 5338 ft — **DOLOMITE** light to medium gray brown, light gray, abundant anhydrite blebs, argillaceous, stylolitic, very fine to microcrystalline, dense, hard, tight, massive, bleeding gas, sucrosic texture, **occasional pin point & micropore porosity, occasional 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**

Upper Desert Creek Anhydrite 5338

5338 - 5351 ft — **ANHYDRITE** white, sucrosic, chalky, crystalline, soft to firm.

Upper Desert Creek Carbonate 5351

5351 - 5363 ft — **DOLOMITE** light to medium gray brown, light gray, abundant anhydrite blebs, argillaceous, stylolitic, very fine to microcrystalline, dense, hard, tight, massive, bleeding gas, sucrosic texture, **occasional pin point & micropore porosity, occasional 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**

Lower Desert Creek 5363

5363 - 5374 ft — **ANHYDRITE** white, sucrosic, chalky, crystalline, soft to firm.

Lower Desert Creek Anhydrite 5374

5374 - 5389 ft	DOLOMITE light to medium gray brown, light gray, abundant anhydrite blebs, argillaceous laminations, shale laminations, stylolitic, very fine to microcrystalline, dense, hard, tight, massive, bleeding gas, sucrosic texture, **occasional pin point & micropore porosity, occasional 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**
5389 - 5419 ft	SHALE medium to dark gray, black, earthy, dolomitic, limy, firm, petroliferous, sooty, **milky cut fluorescence, hydrocarbon odor.**

Akah 5419

5419 - 5446 ft	DOLOMITE light to medium gray brown, light gray, abundant anhydrite blebs, argillaceous, stylolitic, very fine to microcrystalline, dense, hard, tight, massive, bleeding gas, sucrosic texture, **occasionally pin point & micropore porosity, occasionally 4 to 6% intercrystalline porosity, blue to white cut fluorescence, yellow gold residual ring cut.**

ROUTINE CORE ANALYSIS PROGRAM

PETRAL EXPLORATION

Knockando Unit #1 Well
San Juan County, Utah

43 037 31777

Prepared for:

PETRAL EXPLORATION
P.O. Box 5083
Denver, Colorado 80217

Attn: Mr. Bob Coskey

TR96-6171
September 1996

ROUTINE CORE ANALYSIS PROGRAM

PETRAL EXPLORATION

Knockando Unit #1 Well
San Juan County, Utah

Prepared for:

PETRAL EXPLORATION
P.O. Box 5083
Denver, Colorado 80217

Attn: Mr. Bob Coskey

Prepared by:

TerraTek, Inc.
University Research Park
420 Wakara Way
Salt Lake City, Utah 84108

TR96-6171
September 1996

1 PROJECT SUMMARY

1.1 Well Summary

Company:	Petral Exploration	State:	Utah
Well Name:	Knockando Unit #1	County:	San Juan
Field:	Knockando Unit	Location:	Sec.19, T37S, R25E
Drilling Fluid:	Water Base	Elevation:	

1.2 Core Summary

Diamond coring equipment and water-base drilling mud were used in the Knockando Unit #1 well, located in San Juan County, Utah, to obtain a four-inch diameter core. The interval and formation cored are listed below in Table 1-1.

Table 1-1. Core Interval Summary

Core Number	Depth Interval	Formation
1	5157.0' - 5219.3'	Upper Ismay

A representative of TerraTek, Inc. was at wellsite to retrieve the core and prepare it for transport to the TerraTek laboratory in Salt Lake City, Utah for analysis. Residual core fluids were preserved by wrapping the core in plastic film and placing the wrapped cores in polytubes.

1.3 Summary of Analyses

At the request of the client, a core gamma log was recorded for the entire cored interval and the following routine core analysis tests were conducted: 1) fluid saturation determination by the Dean-Stark technique; 2) porosity and grain density measurements with expanding helium; and 3) measurement of permeability to nitrogen gas. These tests were performed on 63 one-inch diameter horizontal plug samples selected from each foot of core. A description of the analytical procedures followed and results of the tests performed are presented in Section 2 of this report.

After the completion of routine core analysis testing, the core was slabbed in 1/3 - 2/3 sections. Photographs were taken of the 1/3 slab sections under white-light. Those photographs have already been distributed to Petral Exploration and its partners as instructed.

1.4 Distribution of Final Reports

Copies of this final report were distributed as outlined below in Table 1-2.

Table 1-2. Core Interval Summary

Number of Copies	Company Name	Recipient
7	McIlnay and Associates 2305 Oxford Lane Casper, Wyoming 82604	Sharon Orr (for distribution to partners)

2 ROUTINE CORE ANALYSIS

2.1 INTRODUCTION

A core gamma log was recorded and routine core analysis tests were performed on core material obtained from the Knockando Unit #1 well. Routine core analysis tests were performed to determine porosity, grain density, saturation of oil and water, and permeability to nitrogen gas. Tests were performed on one-inch diameter horizontal plug samples obtained from each foot of core.

2.2 ANALYTICAL PROCEDURES

Upon arrival in the laboratory, the core was removed from the preservation material, it was pieced together on a core rack, and a core gamma log was recorded for down-hole log correlation. Plug samples were drilled from the core using a diamond-impregnated coring bit and fresh water as coolant.

Fluid saturations were determined by means of the solvent distillation (Dean-Stark) extraction technique, with toluene as the extracting solvent. Oil remaining in the samples following the initial water extraction phase was removed by batch cleaning in a side-arm reflux soxhlet with chloroform/methanol azeotrope until all oil was removed. The samples were dried in a forced-air convection oven at 110°C prior to performing porosity and permeability tests.

Porosity values were determined by measuring grain volumes and bulk volumes. Grain volumes were measured in a helium expansion porosimeter using Boyle's law. Bulk volumes were measured by submerged weight in mercury using Archimedes' principle of buoyancy. Grain volume and dry weight values were used to determine grain density for each sample.

Single-point, steady-state permeability to nitrogen gas was measured in a pressurized Hassler sleeve core holder. Nominal sleeve pressure of 400 psi was applied to prevent gas leakage around the outside of the sample being tested. Downstream flowrate was monitored using a calibrated orifice-equipped pressure transducer. Flowrate was maintained at a maximum of 1 cm^3/s. A form of Darcy's equation was employed to calculate absolute gas permeability values. Permeability values were not corrected for slippage or turbulance.

2.3 RESULTS

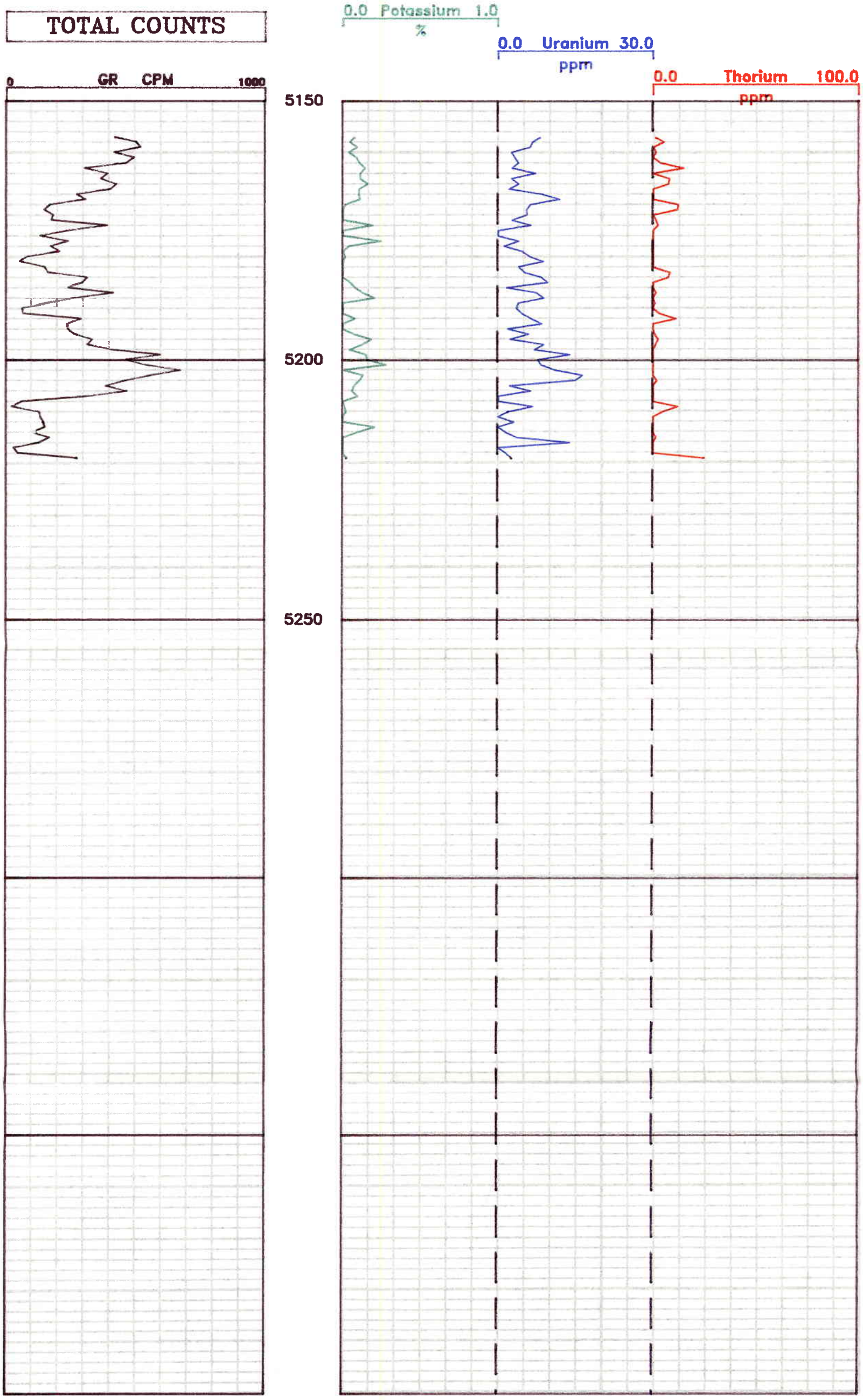
Results of the tests described above are provided on the following pages in graphical and tabular forms. Plots of the gamma ray activities of potassium, uranium, and thorium, as well as the total gamma ray activity, appear separately on the enclosed Component Gamma Log. A plot of the total gamma ray activity also appears on the enclosed Teklog™ plot, along with plots of grain density, permeability, porosity, and fluid saturations. Table 2-1 shows results of tests performed on plug samples. A brief lithologic description for each sample and a corresponding key to the lithologic abbreviations are provided. A data summary page, a crossplot showing permeability versus porosity, frequency distribution tables, and histogram plots are also included.

TERRA TEK GEOSCIENCE SERVICES
360 Wakara Way, SLC Utah 84108 (801) 584-2460

Petral Exploration
Knockando Unit #1 Well

September 12, 1996
TerraTek No. 6171

COMPONENT GAMMA LOG



TERRA TEK GEOSCIENCE SERVICES

360 Wakara Way, SLC Utah 84108 (801) 584-2460

Petral Exploration
Knockando Unit #1 Well

TEKLOG

September 12, 1996
TerraTek No. 6171

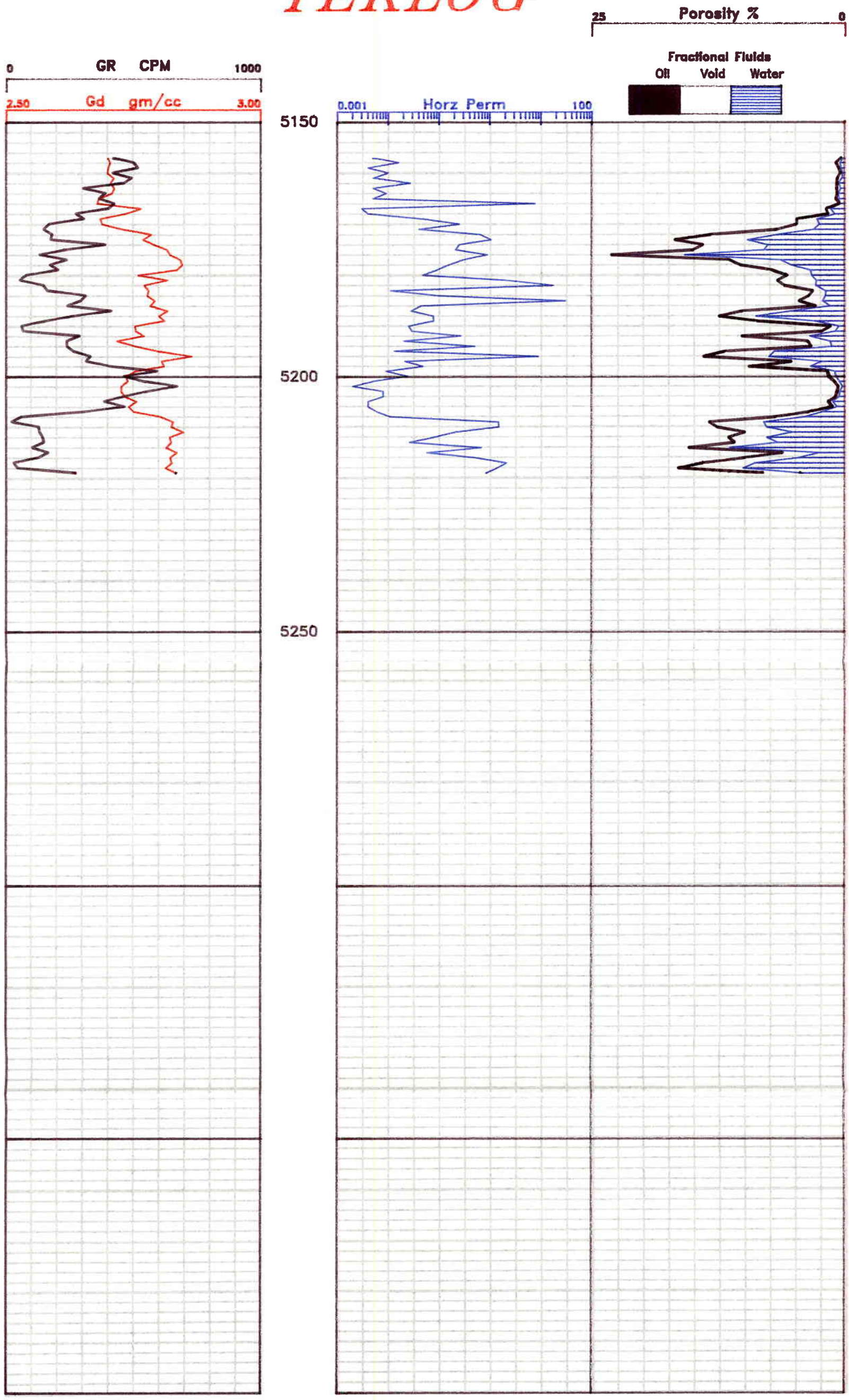


Table 2-1. Plug Dean-Stark Analysis Results

Sample Number	Depth (feet)	Permeability (md)	Porosity (%)	Saturation		Grain Density (g/cm^3)	Lithology
				Oil (%)	Water (%)		
1	5157.0 - 5158.0	<0.01	0.4	0.0	54.0	2.70	Ls,gy-vf-fxl,fos
2	5158.0 - 5159.0	0.02	0.9	2.1	57.4	2.71	Ls,gy,vf-fxl,fos,brec
3	5159.0 - 5160.0	<0.01	0.6	5.2	63.5	2.70	Ls,gy,vfxl,intxl,fos
4	5160.0 - 5161.0	0.01	0.4	5.2	57.7	2.70	Ls,gy,vf-fxl,fos,aff
5	5161.0 - 5162.0	<0.01	0.7	3.1	44.5	2.71	Ls,gy-tan,vf-fxl,intxl,fos
6	5162.0 - 5163.0	0.03	0.8	6.5	80.3	2.71	Ls,gy-tan,fxl,intxl,fos
7	5163.0 - 5164.0	<0.01	0.8	5.0	53.9	2.71	Ls,gy-tan,vf-fxl,intxl,ech*
8	5164.0 - 5165.0	<0.01	0.8	1.2	89.3	2.71	Ls,gy,fxl,intxl,ech*
9	5165.0 - 5166.0	<0.01	0.9	4.0	66.2	2.68	Ls,fxl,intxl,fos,styl,pyr
10	5166.0 - 5167.0	+ 7.62	0.5	4.3	95.2	2.68	Ls,gy,fxl,intxl,fos,nod,pof,dff
11	5167.0 - 5168.0	<0.01	1.9	0.0	78.0	2.77	Ls,gy,vf-fxl,intxl,fos,anhy
12	5168.0 - 5169.0	<0.01	1.7	0.0	61.3	2.73	Ls,gy-tan,vf-fxl,intxl,fos
13	5169.0 - 5170.0	0.05	4.8	0.0	58.8	2.69	Ls,dkgy,vf-fxl,intxl+mol,pof
14	5170.0 - 5171.0	+ 0.25	4.8	0.0	53.8	2.69	Ls,dkgy,vfxl,intxl,styl,lam,fos
15	5171.0 - 5172.0	0.04	6.7	0.0	47.2	2.73	Ls,dkgy,vfxl,intxl,fos,nod,lam
16	5172.0 - 5173.0	0.65	13.3	0.0	50.8	2.79	Ls,dkgybrn,vfxl,anhy,dol,nod,fos,pof
17	5173.0 - 5174.0	1.05	16.8	0.0	57.6	2.77	Ls,dkgybrn,fxl,intxl,anhy,dol,fos
18	5174.0 - 5175.0	0.25	14.0	0.0	54.9	2.79	Ls,dkgybrn,fxl,intxl,anhy,dol,nod,lam
19	5175.0 - 5176.0	0.21	15.0	0.0	53.9	2.82	Dol,brn,vf-fxl,intxl,lam,styl
20	5176.0 - 5177.0	0.88	23.1	0.0	68.7	2.82	Dol,tan,fxl,intxl,anhy,styl,nod,aff
21	5177.0 - 5178.0	0.29	11.4	0.0	56.4	2.84	Dol,tan,vf-fxl,ppvgs+intxl,anhy,if
22	5178.0 - 5179.0	0.15	10.4	0.0	51.8	2.85	Dol,tan,vf-fxl,ppvgs+intxl,anhy
23	5179.0 - 5180.0	0.09	7.2	0.0	48.2	2.84	Dol,tan-gy,mxl,ppvgs,anhy nod,calc
24	5180.0 - 5181.0	0.05	5.7	0.0	58.1	2.76	Ls,gy-tan,f-mxl,ppvgs,styl,dol,nod
25	5181.0 - 5182.0	+ 2.14	6.7	0.0	43.2	2.82	Ls,gy-tan,f-mxl,ppvgs,dol,styl,anhy nod
26	5182.0 - 5183.0	+ 17.61	6.0	0.0	49.0	2.77	Ls,gy-tan,f-mxl,ppvgs,dol,styl,nod
27	5183.0 - 5184.0	0.01	3.2	0.0	61.5	2.78	Ls,gy-tan,fxl,ppvgs,dol,nod,anhy
28	5184.0 - 5185.0	0.10	3.6	0.0	55.4	2.78	Ls,gy-tan,fxl,intxl,dol,styl,nod,anhy
29	5185.0 - 5186.0	+ 30.32	4.6	0.0	49.3	2.79	Ls,gy-tan,fxl,intxl,brec,dol,styl,anhy,cff
30	5186.0 - 5187.0	0.04	2.9	0.0	50.6	2.78	Ls,gy-tan,fxl,intxl,brec,dol,styl,anhy,cff
31	5187.0 - 5188.0	0.03	10.1	0.0	53.2	2.82	Dol,brn,fxl,intxl,anhy,nod

+ - Fracture affecting permeability measurement

* - Contains abundant echinoderm fragments

Sample Number	Depth (feet)	Permeability (md)	Porosity (%)	Saturation		Grain Density (g/cm^3)	Lithology
				Oil (%)	Water (%)		
32	5188.0 - 5189.0	0.08	12.5	0.0	71.2	2.80	Dol,gy-brn,fxl,intxl,calc,anhy,nod,if
33	5189.0 - 5190.0	0.08	8.7	0.0	35.1	2.81	Dol,gy-brn,fxl,intxl,calc
34	5190.0 - 5191.0	0.03	1.4	0.0	44.2	2.75	Ls,gy,vf-fxl,cff,styl,dol,anhy
35	5191.0 - 5192.0	0.03	2.2	0.0	43.8	2.76	Ls,gy,vf-fxl,ppvgs,cff,dol,anhy,nod
36	5192.0 - 5193.0	0.27	10.2	0.0	34.3	2.77	Ls,dkgybrn,fxl,intxl+ppvgs+intprt,anhy,dol,fos
37	5193.0 - 5194.0	0.02	3.7	0.0	40.9	2.72	Ls,gy,fxl,vgy,dol,fos,anhy
38	5194.0 - 5195.0	0.51	3.3	0.0	39.9	2.76	Ls,gy,fxl,ppvgs,nod,anhy,dol
39	5195.0 - 5196.0	0.01	11.9	0.0	59.3	2.80	Dol,brn,fxl,ppvgs,calc,anhy,nod,fos
40	5196.0 - 5197.0	8.93	14.0	0.0	54.1	2.86	Dol,brn,fxl,ppvgs,calc,anhy,nod,fox,pof
41	5197.0 - 5198.0	0.02	5.3	0.0	44.9	2.81	Ls,gy,fxl,ppvgs,dol,fos,anhy
42	5198.0 - 5199.0	0.05	9.5	9.5	36.1	2.81	Ls,gy-brn,fxl,intxl,anhy,nod,dol
43	5199.0 - 5200.0	<0.01	1.8	5.4	57.7	2.75	Ls,gy-brn,vf-fxl,dol,anhy,fos,styl
44	5200.0 - 5201.0	0.02	1.7	12.8	54.4	2.74	Ls,gy,vfxl,intxl,dol,fos
45	5201.0 - 5202.0	<0.01	1.1	3.2	52.9	2.74	Ls,gy,vfxl,intxl,dol,fos
46	5202.0 - 5203.0	<0.01	0.7	4.4	40.6	2.73	Ls,gy,vfxl,intxl,fos,dol
47	5203.0 - 5204.0	<0.01	0.8	12.5	65.9	2.73	Ls,gy,vfxl,intxl,fos,dol,cff,pof
48	5204.0 - 5205.0	<0.01	1.0	8.1	64.8	2.73	Ls,gy,vfxl,intxl,fos,dol,styl
49	5205.0 - 5206.0	<0.01	1.7	6.3	73.1	2.76	Ls,gy-brn,vfxl,intxl,nod,dol,fos
50	5206.0 - 5207.0	<0.01	1.3	7.5	63.5	2.74	Ls,gy-brn,vfxl,intxl,styl,ostn,dol,fos
51	5207.0 - 5208.0	<0.01	3.6	0.0	65.4	2.75	Ls,gy-brn,vf-fxl,intxl,fos,dol
52	5208.0 - 5209.0	0.01	6.6	0.0	57.8	2.80	Ls,gy-tan,vf-fxl,ppvgs,dol,nod,anhy
53	5209.0 - 5210.0	1.47	13.4	0.0	60.2	2.83	Dol,brn,fxl,ppvgs,anhy,nod
54	5210.0 - 5211.0	1.51	12.7	0.0	61.8	2.82	Dol,tan,fxl,ppvgs,anhy,nod,calc
55	5211.0 - 5212.0	0.21	9.9	0.0	53.0	2.85	Dol,brn,f-mxl,ppvgs,anhy,nod,calc
56	5212.0 - 5213.0	0.08	11.5	0.0	67.8	2.82	Dol,tan,vf-fxl,ppvgs,anhy,nod,calc
57	5213.0 - 5214.0	0.03	10.9	0.0	61.2	2.82	Dol,tan,vf-fxl,ppvgs,anhy,nod,calc
58	5214.0 - 5215.0	0.68	15.5	0.0	74.2	2.81	Dol,tan,vf-fxl,anhy,nod,calc
59	5215.0 - 5216.0	0.06	6.2	0.0	41.8	2.84	Dol,gy-brn,fxl,ppvgs,anhy,nod,calc
60	5216.0 - 5217.0	0.50	9.9	0.0	46.4	2.82	Dol,brn,fxl,anhy,nod,pof
61	5217.0 - 5218.0	2.10	14.1	0.0	63.7	2.83	Dol,tan,ppvgs,anhy,nod
62	5218.0 - 5219.0	1.38	16.5	0.0	61.3	2.81	Dol,tan,f-mxl,ppvgs,anhy,fos,calc
63	5219.0 - 5220.0	0.84	8.1	0.0	54.5	2.83	Dol,brn-gy,f-mxl;anhy,nod,calc,pof

+ - Fracture affecting permeability measurement

* - Contains abundant echinoderm fragments

Description Scheme for Carbonate Sedimentary Rocks:
Rock Type, Color, Grain Size/Crystal Size, Porosity Type, Accessories

Description Scheme for Clastic Sedimentary Rocks:
Rock Type, Color, Grain Size, Cement, Structures and Accessories

Key to Abbreviations:

aff	- anhydrite filled fracture	frac	- fracture	pis	- pisolitic
alt	- altered	fri	- friable	pk	- pink
anhy	- anhydrite(ic)	gff	- gouge filled fracture	pof	- partially open fracture
arg	- argillaceous	glauc	- glauconitic	ppvgs	- pinpoint vugs
bdd	- bedded	gn	- green	ptg	- parting(s)
bent	- bentonite	gr	- grain(ed)	purp	- purple
bf	- buff	grnl	- granule	pyr	- pyrite(ic)
biot	- bioturbated	gy	- gray	qff	- quartz filled fracture
bit	- bitumen	gyp	- gypsum(iferous)	qtz	- quartz
bl	- blue(ish)	hem	- hematite(ic)	red	- red
blk	- black	if	- incipient fracture	sa	- salty
bnd	- banded	incl	- inclusion	sdy	- sandy
brec	- breccia(ted)	intprt	- interparticle	sh	- shale
brn	- brown	intrprt	- intraparticle	shy	- shaley
bur	- burrowed	intxl	- intercrystalline	sid	- siderite
c	- coarse	lam	- laminated	sil	- silica(eous)
calc	- calcite(areous)	lav	- lavender	sl/	- slightly
carb	- carbonaceous	lig	- lignite(ic)	sltst	- siltstone
cff	- calcite filled fracture	ls	- limestone	slty	- silty
cgl	- conglomerate	lt	- light	ss	- sandstone
chky	- chalky	m	- medium	stn	- stain(ed)(ing)
chlor	- chlorite	mar	- maroon	str	- streak
cht	- chert	mas	- massive	styl	- stylolite
chty	- cherty	mdy	- muddy	suc	- sucrosic
clst	- clast	mic	- micro	tan	- tan
cly	- clay(ey)	mica	- micaceous	v/	- very
clyst	- claystone	mol	- moldic	vc	- very coarse
cob	- cobble	ms	- mudstone	vf	- very fine
dism	- disseminated	mtx	- matrix	vgy	- vuggy
dk	- dark	nod	- nodule(s)	wh	- white
dff	- dolomite filled fracture	o	- oil	wthrd	- weathered
dol	- dolomite(ic)	of	- open fracture	yel	- yellow
f	- fine	ool	- oolitic	xl	- crystalline
fen	- fenestral	org	- organic		
fis	- fissile	orng	- orange		
fos	- fossil(iferous)	pbl	- pebble		
		pel	- peloids		
		pff	- pyrite filled fracture		

TerraTek
University Research Park
420 Wakara Way • Salt Lake City, Utah 84108
Telephone (801) 584-2400
FAX (801) 584-2406

Table 2-2. Core Analysis Data Summary - Plug Dean-Stark Analysis

Horizontal Permeability (Kh):

Number of Samples	63
Minimum Permeability	0.002 md
Maximum Permeability	30.319 md
Arithmetic Average	1.284 md
Geometric Average	0.071 md
Median	0.046 md
Standard Deviation	4.549 md

Porosity:

Number of Samples	63
Minimum Porosity	0.4 %
Maximum Porosity	23.1 %
Arithmetic Average	6.5 %
Median	5.3 %
Standard Deviation	5.5 %

Oil Saturation:

Number of Samples	63
Minimum Oil Saturation	0.0 %
Maximum Oil Saturation	12.8 %
Arithmetic Average	1.7 %
Median	0.0 %
Standard Deviation	3.2 %

Water Saturation:

Number of Samples	63
Minimum Water Saturation	34.3 %
Maximum Water Saturation	95.2 %
Arithmetic Average	56.7 %
Median	55.4 %
Standard Deviation	12.0 %

Grain Density:

Number of Samples	63
Minimum Grain Density	2.68 g/cm^3
Maximum Grain Density	2.86 g/cm^3
Arithmetic Average	2.77 g/cm^3
Median	2.77 g/cm^3
Standard Deviation	0.05 g/cm^3

Horizontal Permeability
vs
Porosity

Petral Exploration
Knockando Unit #1 Well
Upper Ismay Formation
San Juan County, Utah

12-Sep-96

Depth Interval: 5157 to 5219 feet TerraTek File No.: 6171		
Porosity (ø), %		
Minimum	Maximum	Average
0.378	23.106	6.547
Permeability (K_h), md		
Minimum	Maximum	Geo. Average
0.002	30.319	0.071
Equation of the Line log Kh = 0.1147 × ø - 1.9017 Correlation Coefficient: 0.60970		

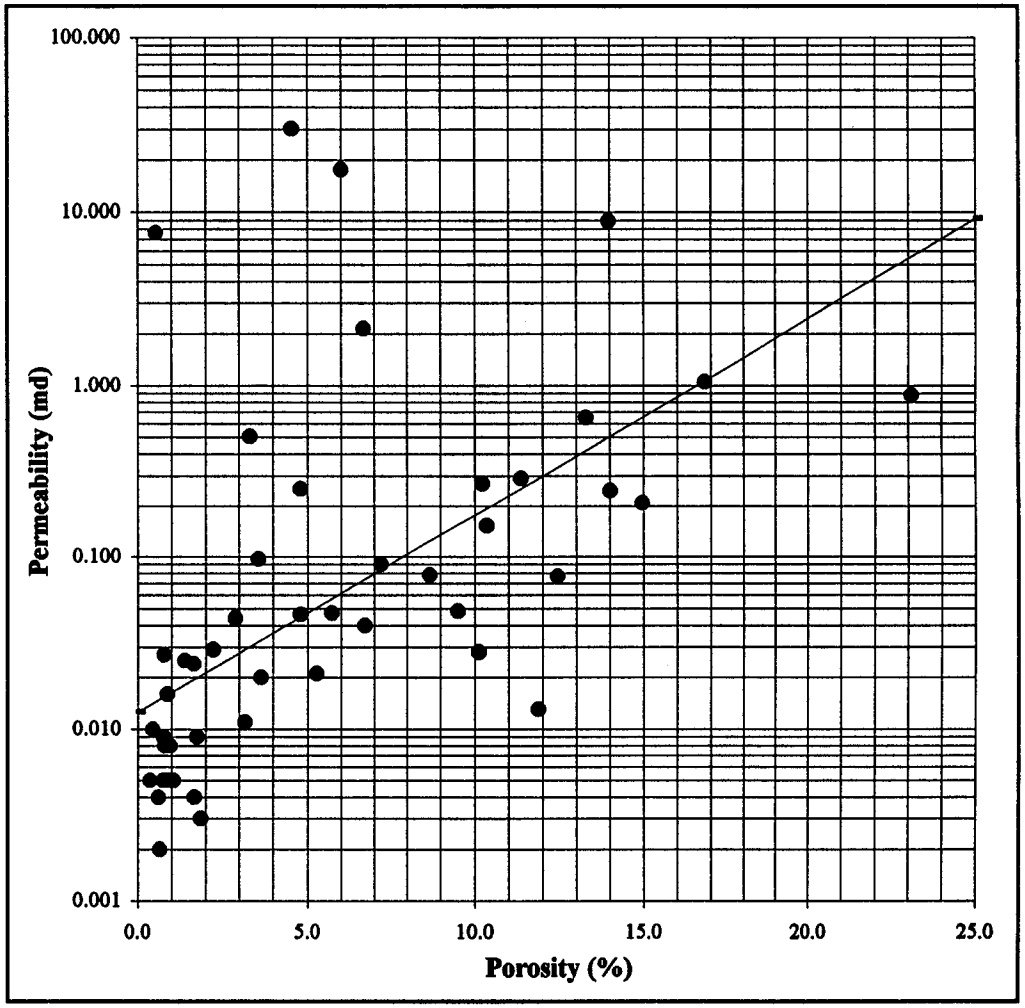


Figure 2-1. Permeability versus Porosity Crossplot

Table 2-3. Horizontal Permeability Frequency Distribution

Horizontal Permeability (md)	Frequency	Cumulative Percent
0.002	1	1.6%
0.004	5	9.5%
0.006	6	19.0%
0.008	2	22.2%
0.01	3	27.0%
0.02	5	34.9%
0.04	8	47.6%
0.06	5	55.6%
0.08	3	60.3%
0.1	2	63.5%
0.2	1	65.1%
0.4	6	74.6%
0.6	2	77.8%
0.8	2	81.0%
1	2	84.1%
2	4	90.5%
4	2	93.7%
6	0	93.7%
8	1	95.2%
10	1	96.8%
More	2	100.0%
Number of Samples	63	

Figure 2-2. Horizontal Permeability Histogram

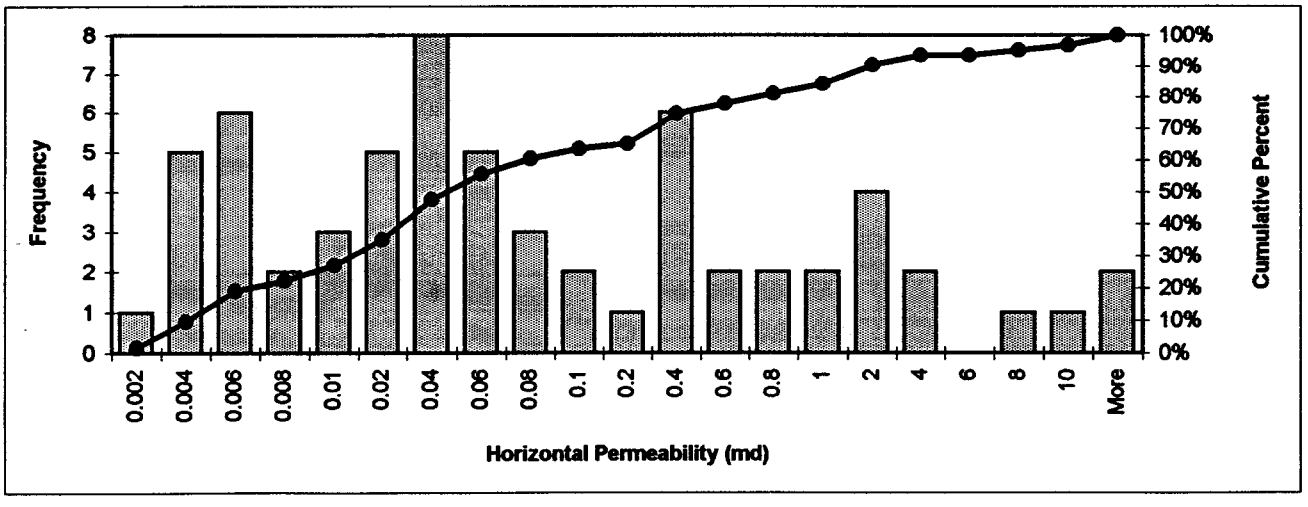


Table 2-4. Porosity Frequency Distribution

Porosity (%)	Frequency	Cumulative Percent
0.5	2	3.2%
1	11	20.6%
2	3	25.4%
2	5	33.3%
3	2	36.5%
4	5	44.4%
5	3	49.2%
6	2	52.4%
7	5	60.3%
8	1	61.9%
9	2	65.1%
10	3	69.8%
12	7	81.0%
14	5	88.9%
16	4	95.2%
18	2	98.4%
20	0	98.4%
More	1	100.0%
Number of Samples	63	

Figure 2-3. Porosity Histogram

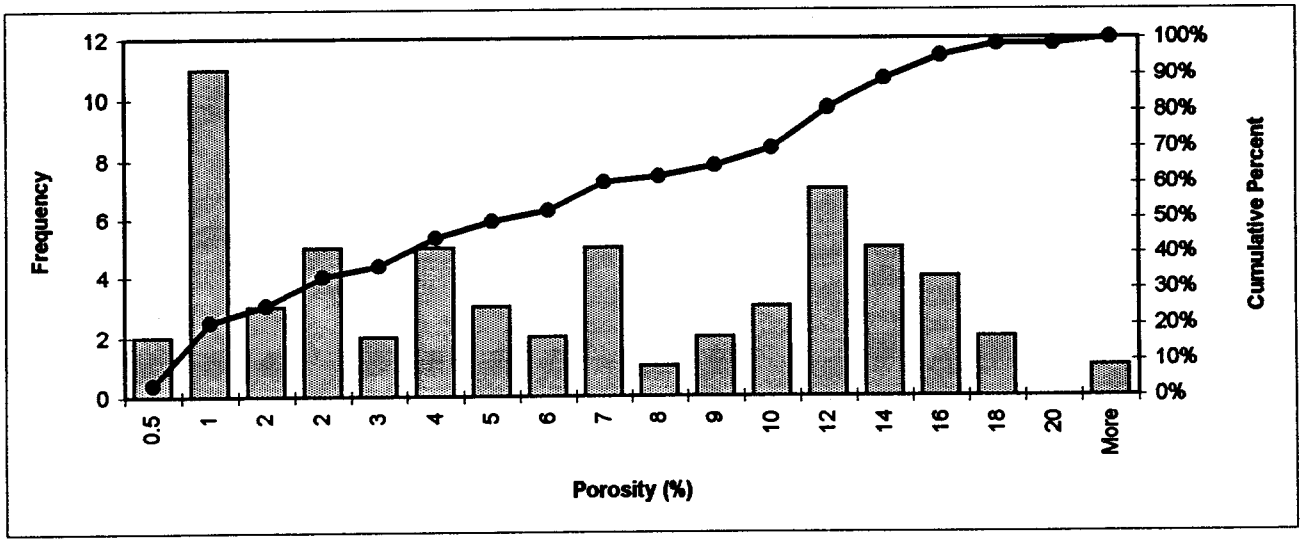


Table 2-5. Oil Saturation Frequency Distribution

Oil Saturation (%)	Frequency	Cumulative Percent
0	45	71.4%
1	0	71.4%
2	1	73.0%
3	1	74.6%
4	2	77.8%
5	4	84.1%
6	3	88.9%
7	2	92.1%
8	1	93.7%
9	1	95.2%
10	1	96.8%
11	0	96.8%
12	0	96.8%
More	2	100.0%
Number of Samples	63	

Figure 2-4. Oil Saturation Histogram

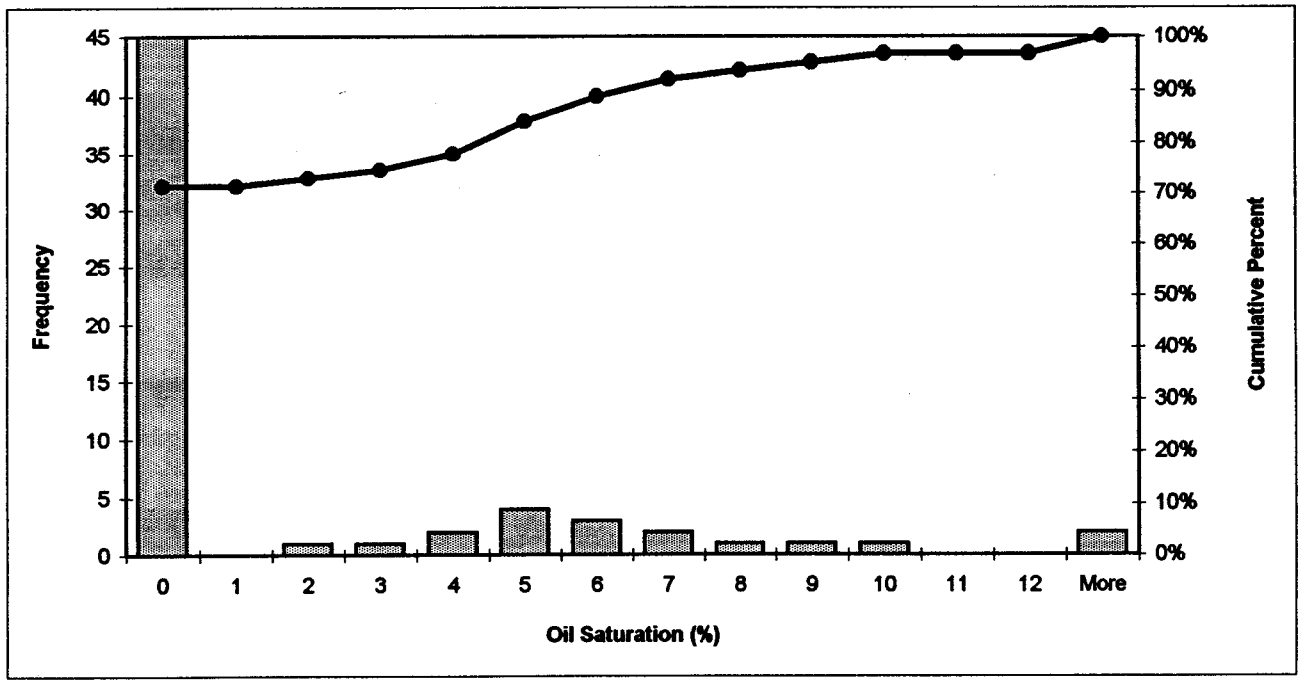


Table 2-6. Water Saturation Frequency Distribution

Water Saturation (%)	Frequency	Cumulative Percent
30	0	0.0%
40	4	6.3%
45	8	19.0%
50	5	27.0%
55	14	49.2%
60	10	65.1%
65	10	81.0%
70	5	88.9%
75	3	93.7%
80	1	95.2%
90	2	98.4%
More	1	100.0%
Number of Samples	63	

Figure 2-5. Water Saturation Histogram

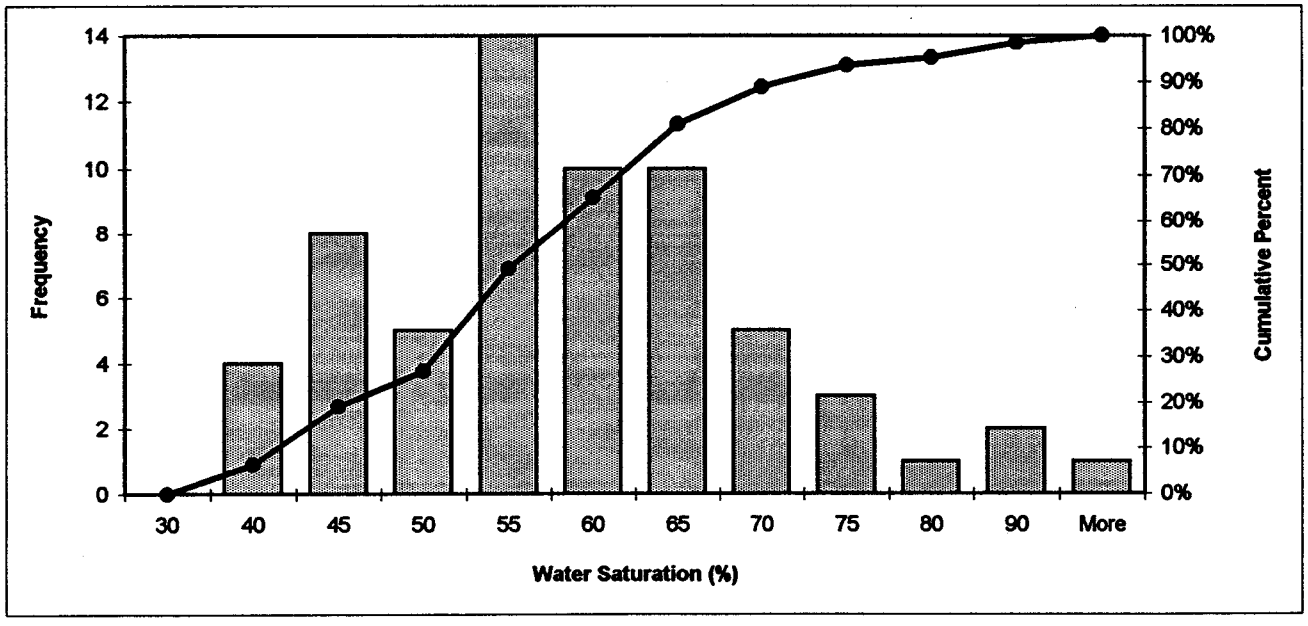


Table 2-7. Grain Density Frequency Distribution

Grain Density (g/cm^3)	Frequency	Cumulative Percent
2.70	5	7.9%
2.71	5	15.9%
2.72	3	20.6%
2.73	3	25.4%
2.74	4	31.7%
2.75	1	33.3%
2.76	7	44.4%
2.77	2	47.6%
2.78	4	54.0%
2.79	2	57.1%
2.80	4	63.5%
2.81	3	68.3%
2.82	6	77.8%
2.83	7	88.9%
2.84	3	93.7%
2.85	3	98.4%
More	1	100.0%
Number of Samples	63	

Figure 2-6. Grain Density Histogram